

ADVANCING TSMO

Making the Business Case for Institutional, Organizational, and Procedural Changes

presented by

Federal Highway Administration, Office of Operations



U.S. Department of Transportation
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December 17, 2018



Today's Presentation

- ▶ High-level overview of a recent Federal Highway Administration (FHWA) guide:
 - » *“Advancing Transportation Systems Management and Operations (TSMO): Making the Business Case for Institutional, Organizational, and Procedural Changes.”*
- ▶ “How to” make the business case for Institutional, Organizational, and Procedural (“IOP” for short) changes to advance TSMO.
- ▶ Guide will be available at:
 - » <https://ops.fhwa.dot.gov/publications/publications.htm>



Topics

- ▶ Background.
- ▶ Making an effective business case:
 - » Part I. Getting Started.
 - » Part II. Preparing the Business Case.
 - » Part III. Agency Leadership for IOP Changes.
 - » Part IV. Tailoring the Business Case to Specific Audiences.
- ▶ Conclusions.
- ▶ Q&A.





BACKGROUND



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What is TSMO?

“Transportation Systems Management and Operations (TSMO) is a set of strategies that focus on operational improvements that can maintain and even restore the performance of the existing transportation system before extra capacity is needed.”

From the FHWA “What is TSMO?” Web site, available at:
<https://ops.fhwa.dot.gov/tsmo/index.htm>



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The Importance of Advancing TSMO

- ▶ Most agencies already employ TSMO strategies, but these strategies may be **ad-hoc** and vulnerable to stagnation and disruption.
- ▶ Benefits of advancing TSMO from ad-hoc to institutionalized:

↓  Decreased travel time and delay


↑  Improved collaboration

↑  Improved reliability

↑  Better agency efficiencies

↓  Reduction in crashes

↓  Lower implementation costs

↓  Lower vehicle operating costs

↓  Faster implementation timelines



Why are IOP Changes Important to Advancing TSMO?

- ▶ Advancing TSMO effectiveness is tied to IOP arrangements that support TSMO, rather than budgets or technology alone.

The six CMM dimensions (largely IOP arrangements) for effective TSMO



Why are IOP Changes Important to Advancing TSMO? (continued)

- ▶ Many IOP arrangements in agencies today were designed for legacy services.
- ▶ Adapting IOP arrangements for TSMO removes key obstacles to improving system performance in today's landscape.



Institutional Changes

- ▶ Growing an agency culture that values TSMO.
- ▶ Adjustments related to agency strategic direction, leadership, technical understanding, collaboration, and outreach.

For example:

- TSMO embedded in agencywide mission, vision, and/or objectives.
- Memoranda of Understanding (MOU) established with key agency partners.
- Visible leadership support for TSMO.
- Initiatives to improve TSMO awareness and understanding across the agency.



Organizational Changes

- ▶ Adjusting the structure of responsibilities.
- ▶ Changes related to reorganization, staff training, recruitment, retention, and inter-agency collaboration.

For example:

- Relocating units with related responsibilities to be closer to one another.
- Establishing a TSMO manager.
- Reorganization to give TSMO standing equal with legacy functions, or to reduce stove piping.
- Workforce development initiatives.



Procedural Changes

- ▶ Improving business and technical processes to better incorporate TSMO.
- ▶ Could include adjustments in planning, budgeting, and performance measurement.

For example:

- TSMO integrated into agencywide planning.
- TSMO incorporated into project selection and development.
- TSMO-oriented performance measures identified and implemented.
- Defined funding approach for TSMO.



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Why Make the Business Case for IOP Changes?

- ▶ **Change is hard!**

- » IOP changes are often less tangible and/or effect a large number of staff.

- ▶ **Resources are limited.**

- » Why should TSMO be prioritized?

- ▶ **Change management.**

- » What is the end goal for these IOP changes?

- » What should staff expect?



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Why Make the Business Case for IOP Changes? (continued)

The business case is a well-formed argument that is based on compelling qualitative and anecdotal information as well as technical analyses that rationalize and justify the need for the IOP changes to advance TSMO.



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MAKING AN EFFECTIVE BUSINESS CASE



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Framework for Making the Business Case

- ▶ A process for the development and communication of the business case for making IOP changes to advance TSMO.
- ▶ Involves:
 - » Identifying the transportation problem to be addressed.
 - » Relating the problem to the need to advance TSMO.
 - » Showing how effective TSMO requires certain IOP changes.
 - » Illustrating the payoffs versus costs of these IOP changes.



Organized into Four Parts

- ▶ Part I. Getting Started.
- ▶ Part II. Preparing the Business Case.
- ▶ Part III. Agency Leadership for IOP Changes.
- ▶ Part IV. Tailoring the Business Case to Specific Audiences.





PART I. GETTING STARTED



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Business Case Formats

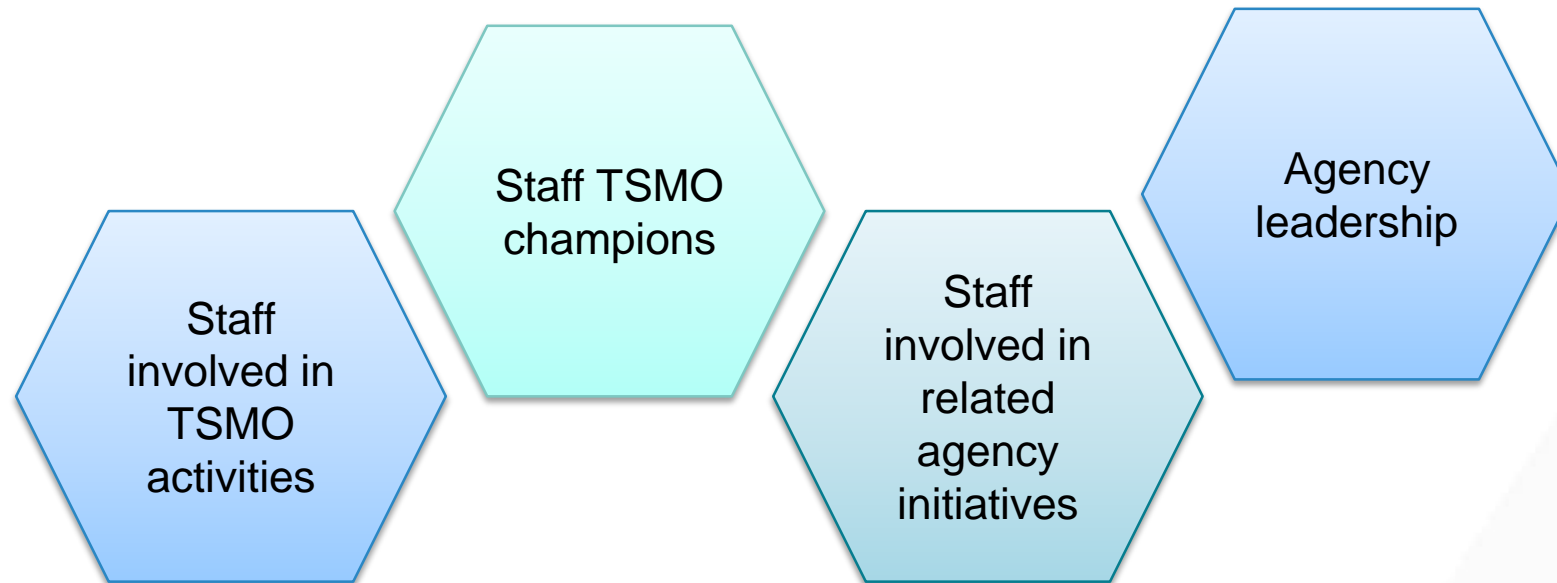
- ▶ Business case format depends on audience and objectives:
 - » Formal technical report.
 - » Technical memo.
 - » Web page.
 - » Short handouts/flyers.
 - » Presentations.
 - » Elevator speech.
 - » Informal conversations.



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Who Should Make the Business Case?

- ▶ Staff with a good understanding of the agency's TSMO capabilities, activities, plans, and challenges.
- ▶ These individuals may be:



Characteristics of an Effective Business Case

- A. Tailoring the IOP business case to local priorities.
- B. Illustrating how TSMO can augment the effectiveness of all agency programs.
- C. Specifying the strategic IOP changes needed.
- D. Identifying external and internal benefits.
- E. Describing the required levels of effort and resources.
- F. Identify relationships between costs, benefits, and risks.
- G. Targeting the IOP business case to specific audiences.



A. Tailoring the IOP Business Case to Local Priorities

- ▶ Tailor to local transportation context, considering needs in existing TSMO activities.
- ▶ Typical, local IOP challenges may include:
 - » Traffic incident responsibilities not well coordinated.
 - » Intelligent Transportation Systems (ITS) technologies under-maintained.
 - » No plan for TSMO improvement, risking future staffing/budget shortfalls.
 - » No clear responsibility or authority to improve TSMO.



B. Illustrating How TSMO Can Augment the Effectiveness and Benefits of all Agency Programs

- ▶ TSMO does not compete with important agency functions regarding physical roadway capacity.
- ▶ It is another set of tools at the agency's disposal.
- ▶ TSMO can also be added to other projects for increased effectiveness.
- ▶ The business case can frame TSMO improvements as a cost-effective complement to legacy agency programs.



C. Specifying the Strategic IOP Changes Needed

- ▶ Specify the strategic IOP changes needed, including specific actions and desired outcomes.
- ▶ Relate these changes to the appropriate decisionmaking level.
- ▶ Key improvements are often outside the span of control of TSMO managers. Such changes require support and authorization from senior leadership.



D. Identifying External and Internal Benefits

- ▶ IOP changes provide two general types of payoffs: external and internal.
- ▶ External payoffs to customers flow from the enhanced ability to implement TSMO solutions with safety, mobility, and reliability benefits.
- ▶ Internal payoffs can be thought of in several ways, including payoffs related to staff efficiency and minimized redundancies.



E. Describing the Required Levels of Effort and Resources

- ▶ Describe the potential levels of effort and/or resources required.
- ▶ These costs may be described as:
 - » **Dollar costs**—staff time, consultant studies.
 - » **Level of effort**—the amount or proportion of time needed.
 - » **Top management initiatives**—the trade-offs of prioritizing TSMO over other initiatives.



F. Identify Relationships between Costs, Benefits, and Risks

- ▶ Making the business case for IOP changes is not a conventional cost-benefit exercise.
- ▶ Associated costs are difficult to measure or express.
- ▶ Benefits of IOP changes occur across a range of TSMO strategies and applications.
- ▶ Risks are associated both with investments made and not made (“the risk of doing nothing”).



G. Targeting the IOP Business Case to Specific Audiences

- ▶ Key audiences for the TSMO business case include:
 - » Agency TSMO staff and management.
 - » Other agency units whose involvement is essential.
 - » Agency top management and leadership.
 - » Elected officials.
 - » Local transportation partners.
 - » The general public.





PART II. PREPARING THE BUSINESS CASE



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Building a Business Case

- ▶ Seven key topics, or “sections”, to consider in developing the business case.
- ▶ Each section need not be onerous or lengthy—the level of detail will vary depending on context.
- ▶ The following slides walk through these seven sections.



Seven Key Sections of the Business Case

- ▶ Section 1—Describe current system and TSMO activities as a baseline for change.
- ▶ Section 2—Describe how current challenges require IOP changes.
- ▶ Section 3—Specify recommended IOP changes.
- ▶ Section 4—Identify benefits from proposed IOP changes.
- ▶ Section 5—Identify costs and resource requirements.
- ▶ Section 6—Discuss balance between rate of return and risks.
- ▶ Section 7—Identify responsibilities for change management.



Section 1—Describe the current system and TSMO activities as a baseline for change

- ▶ Purpose: We want the audience to fully understand current challenges so they can fully understand how these challenges require IOP changes to support TSMO.
- ▶ Orient audience by describing the impacts of current operational challenges.
- ▶ Refer to any TSMO progress made to-date.



Section 1—Examples of Content

- ▶ Current TSMO-related challenges.
- ▶ Existing TSMO activities and historical context.
- ▶ How current system performance compares to desired goals.
- ▶ Indicators of the need for new or enhanced strategies.
- ▶ How TSMO can complement major capacity additions.



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Section 2—Describe how current challenges require IOP changes

- ▶ Purpose: Make the persuasive argument for why IOP changes to support TSMO are needed.
- ▶ Describe the relationship between current challenges, TSMO improvements, needed IOP changes, and desired outcomes.



Section 2—Examples of Content

- ▶ Constraints of legacy IOP arrangements to advancing TSMO strategies.
- ▶ TSMO improvement often “plateaus” under legacy IOP arrangements.
- ▶ How a supportive IOP context improves TSMO program effectiveness.
- ▶ Can reference Federal research demonstrating that improved TSMO effectiveness is related to improvements in IOP arrangements.



Section 2—Case Study: Colorado DOT (CDOT)

- ▶ Beginning in 2013, CDOT made several IOP changes to advance TSMO, including:
 - » Organizational changes: Creation of a TSMO Division.
 - » Procedural changes: Establishment of a TSMO Evaluation.
- ▶ This helped CDOT pursue TSMO projects with high benefit-cost ratios—typically around 10:1 and as high as 40:1.
- ▶ Other benefits include: quantifiable reductions in delay and improvements in travel time reliability and safety.



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Section 3—Specify Recommended IOP Changes

- ▶ Purpose: Document the specific, proposed IOP actions.
- ▶ Describe these actions and how they will support advancement of TSMO.
- ▶ For example: Creating Memoranda of Understanding (MOUs) with first responder partners will help evolve Traffic Incident Management (TIM) activities from ad hoc to institutionalized.



Section 3—Examples of Content

- ▶ Common IOP changes for TSMO, from the CMM experience, are provided in the guide.
- ▶ Common IOP changes for the **CMM business processes dimension** are on the next slide.
- ▶ Level of detail will vary by specific action and audience. Business cases seeking authorization may wish to include more detail.



Common IOP Actions from the CMM Business Processes Dimension

Actions Items

Analyze recurring and non-recurring delay problems for TSMO applicability.

Create regional/statewide TSMO plan/program/TSMO Program Plan.

Insert TSMO into Transportation Improvement Program (TIP)/Long-Range Transportation Plan (LRTP)/and other statewide/regional plans.

Develop a formal TSMO budget line item and Integrate TSMO into the programming processes.

Integrate TSMO into the standard project development process.

Develop TSMO business case for various key stakeholders.

Establish methods to evaluate TSMO vs. capacity options, including Benefits/Cost (B/C).

Identify institutional mechanism to shorten planning horizons to facilitate TSMO solutions.

Pilot FHWA INVEST model for operations and maintenance sustainability assessment.

Include consideration of advanced, proactive TSMO strategies (Integrated Corridor Management, Active Transportation and Demand Management, etc.).



Section 4—Identify Benefits from Proposed IOP Changes

- ▶ Purpose: Identify benefits expected as TSMO activities move from ad hoc to mainstreamed/institutionalized via IOP changes.
- ▶ Direct benefits from IOP changes may include:
 - » Agency efficiency.
 - » Enhancement to all projects from the inclusion of TSMO.
 - » Increased investment options and better cost-efficiency.
 - » Agency partnerships.
- ▶ Indirect benefits from IOP changes include benefits from the improved TSMO applications they support (i.e., safety, mobility, and reliability benefits).



Section 4—Examples of Content

- ▶ Tailored examples of internal agency and external benefits from peer experiences.
- ▶ Recognition of which benefits are quantifiable versus descriptive.
- ▶ The following slide categorizes some external and internal benefits from making IOP changes to advance TSMO.



External and Internal Benefits of IOP Changes

IOP	Capability Improved	Payoffs	
		External (Customers)	Internal (Agency)
Processes	<ul style="list-style-type: none"> ▶ TSMO integrated into agency planning and programming. ▶ TSMO part of project development process. ▶ TSMO-oriented performance measures specified. ▶ Best available technology standardized. 	<ul style="list-style-type: none"> ▶ Better targeting on causes of congestion. ▶ Improved response time and strategy effectiveness. ▶ Providing continuous improvement. ▶ Effective detection and solution arrangements. 	<ul style="list-style-type: none"> ▶ Cost effective use of limited funds. ▶ Ability to use best available technology for efficiency. ▶ Improved detection and response to disruption, and real time management of the system.
Organization	<ul style="list-style-type: none"> ▶ Stove piping reduced. ▶ Staff capabilities improved. ▶ Improved coordination. 	<ul style="list-style-type: none"> ▶ More accurate and timely responses to nonrecurring events. 	<ul style="list-style-type: none"> ▶ Improved staff efficiency. ▶ Ability to capitalize on new concepts.
Institutional	<ul style="list-style-type: none"> ▶ TSMO embedded in formal agency mission and policy. ▶ Improved partner collaboration. ▶ Visible agency TSMO leadership and support. 	<ul style="list-style-type: none"> ▶ Clarifies expectations. ▶ Quicker/more effective response. ▶ Public accountability. 	<ul style="list-style-type: none"> ▶ Includes TSMO considerations in project prioritization. ▶ Reliable support for TSMO units. ▶ Efficient integration.

Section 5—Identify Costs and Resource Requirements

- ▶ Purpose: Identify staff and resource requirements associated with implementing proposed IOP changes.
- ▶ Describe quantifiable as well as nonquantifiable costs.
- ▶ Identify full range of change management activities for both types of costs.
- ▶ Examples of way to think about these costs are shown on the following slide.



Section 5—Examples of Content

Level-of-Effort Type	Measured
Staff effort in developing new processes and collaborations.	Percent of full time equivalent (FTE) staff resource multiplied by the time period needed for that staff person (and/or costs to hire consultant).
Staff effort in outreach and education.	Percent of FTE staff resource multiplied by the time period needed for that staff person (and/or costs to hire consultant).
Agency champion's efforts to overcome skepticism.	Percent of staff time required, peer capital.
Leadership time to support IOP changes.	Leader's expenditure of leadership and peer capital.












Section 5—Case Study: Michigan DOT (MDOT)

- ▶ Currently implementing their TSMO Implementation and Strategic Plan.
 - » Available online at www.michigan.gov/tsmo.
- ▶ The plan developed **action matrices** for the full spectrum of MDOT TSMO functions.
- ▶ The matrices outline resource requirements for each action and action sub-step—including staff leads, staff support, resources, timeline, etc.
- ▶ Example matrix on the following slide.



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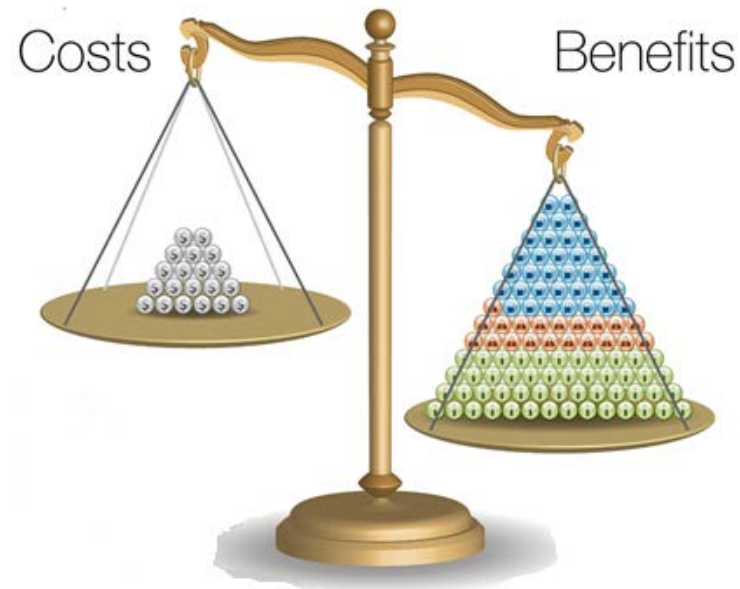
Section 5—Case Study: Michigan DOT (continued)

 Modal Interaction & Integration (Example)														
Priority Actions 	Steps to Address Action 	Supports Strategic Area of Focus							MDOT Lead 	MDOT Support 	Partners 	Resources 	Timeline 	Measures of Success 
		1	2	3	4	5	6	7						
Action 1: Greater Operations participation in and support of M2D2.	Step 1: Outreach to M2D2 organizers.		✓		✓	✓			John Doe	Jonny, Janet	M2D2 champions	Collaboration, Staff time	1 month (12/2016)	Establish point of contact
	Step 2: Agree on Ops participation		✓		✓	✓			Jane Doe	Jonathon, Janie	M2D2 champions	Partnership, staff time	2 months (1/2017)	Gain agreement
	Step 3: Select Ops representative		✓		✓	✓			Joe Doe	Jon, Jean	MDOT partners	Partnership, staff time	3 months (2/2017)	Begin participation
Action 2: Gain agreement on good multimodal performance measures.	Step 1													
	Step 2													
	Step 3													
Action 3: Pilot and evaluate the need for a regional multimodal specialist.	Step 1													
	Step 2													
	Step 3													



Section 6—Discuss Balance between Rate of Return and Risks

- ▶ Purpose: Present potential benefits **in comparison** to expected costs as well as the risks of no action.



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Section 6—Examples of Content

- ▶ Contrast between benefits described in section 4 and costs described in section 5.
- ▶ Acknowledge that many benefits are anecdotal without easily quantifiable values.
- ▶ Compare TSMO costs and with other mobility improvement options.
- ▶ Discuss risks and opportunity costs associated with *not* advancing TSMO via IOP changes.



Section 7—Identify Responsibilities for Change Management

- ▶ Purpose: Identify responsibilities for proposed IOP changes to facilitate a common understanding of needed management and leadership efforts.
- ▶ Many IOP changes will cut across the agency and require cooperation from other parts of the agency, including top management.



Section 7—Examples of Content

- ▶ Focus on roles and responsibilities for key IOP improvement actions.
- ▶ Identify sponsors and managers for key IOP changes.
- ▶ Identify critical changes that require support and authorization, including cross-cutting initiatives that require intra-agency cooperation.





PART III. AGENCY LEADERSHIP FOR IOP CHANGES



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The Role of Leadership

- ▶ IOP changes often require leadership support; so addressing the concerns of top management is vital.
- ▶ Limited tenure of the DOT CEO position means TSMO competes with other priorities for leadership attention and support.
- ▶ Tailoring a business case to leadership, therefore, may be a key objective of making the business case.



Understanding “Leadership Capital”

► Leadership capital can be subdivided into three types:

1. Leadership Reputational Capital

2. Leadership Representative Capital

3. Leadership Intellectual Capital



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IOP Changes Requiring Leadership Involvement

- ▶ Important to note that not all IOP changes will require leadership involvement.
- ▶ Many IOP changes can be initiated or fully implemented by managers in TSMO-related functions.
- ▶ Still, the following slides provide examples of IOP changes that likely *do* require leadership involvement.
- ▶ These examples can serve as a guide for business case preparers.



Institutional Changes: Building a Culture that Values and Supports TSMO

- ▶ Key focus areas for leadership include:
 - » Explicitly including TSMO in the agency's mission and objectives.
 - » Marketing TSMO, both internally and externally.
 - » Facilitating collaboration, both internally and externally.



Organizational Changes: Reorganizing and Staffing

- ▶ **Organizational changes and reorganization**—Adjustments in roles, responsibilities, and even organizational structure.
- ▶ **Staffing**—Reallocation of existing positions, an increase in Full-Time Equivalents (FTEs), or a redefinition of certain positions.



Procedural Changes: Improvements to Key Business and Technical Processes

- ▶ Business and technical processes for TSMO are often substantially different than those developed to support capital construction and maintenance.
- ▶ Changes to traditional processes, or the development of new processes.



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PART IV. TAILORING THE BUSINESS CASE TO SPECIFIC AUDIENCES



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Tailoring the Business Case

- ▶ Important to gain the support of a variety of stakeholders.
- ▶ Should tailor the business case to a variety of internal and external audiences, for example:
 - » Agency leaders.
 - » Technical management and staff.
 - » Transportation partners.
 - » The general public.



Tailoring the Business Case (continued)

- ▶ Agency leaders:
 - » Short and concise, with examples to illustrate proven benefits.
 - » Show link between TSMO and overall agency goals.
- ▶ Technical management and staff:
 - » Technical discussions may be helpful, but must be “skim-able”.
 - » Acknowledge the agency already implements TSMO activities, highlight that advancing TSMO benefits all roles.
- ▶ Transportation partners:
 - » Highlight how increased collaboration around TSMO will enhance their own programs.
 - » Technical detail is a sliding scale, depends on familiarity with TSMO.



Tailoring the Business Case (continued)

- ▶ The general public:
 - » Concise (ideally 1 page), avoid acronyms and jargon, employ graphics and narratives.
 - » Discuss TSMO in terms of services and outcomes rather than in terms of projects and programs.



Example Business Case to the General Public (Michigan)



Tired of Sitting in Traffic? Us too.

The Michigan Department of Transportation (MDOT) is implementing innovative solutions that reduce congestion and increase safety simply by improving the day-to-day operations of the roads we've already built. These solutions use advanced technologies and partnerships to increase mobility, reliability, and safety. Cost-effective and quick to implement, they also provide high benefit-to-cost ratios when combined with traditional means of building and maintaining the state transportation system. Plus, these solutions build on and strengthen MDOT's current longtime services, such as clearing crashes and plowing snow. Some examples of these solutions and their benefits are listed to the right.



Efficient commutes

Optimally timed traffic lights help motorists flow more smoothly through intersections. This traffic light harmonization can reduce travel times by 8 to 20 percent.

Reliable commutes

Michigan Traffic Incident Management Effort (Mi-TIME) provides important training on quickly and safely clearing incidents. So far Mi-TIME has trained more than 5,600 responders.

Safer roads

Technologies to safely manage construction zones help decrease the number of work zone crashes, injuries, and deaths on Michigan roadways.

Easier-to-use traveler information

MDOT's Mi Drive website (www.michigan.gov/drive) provides 24/7 traffic and incident information.

Michigan's reputation as a leader

Planet M (www.planetm.com) promotes innovation in transportation mobility technologies across the state of Michigan.

Fewer wasted gallons of gas

Travelers won't have to waste gasoline idling in congestion, enhancing livability and sustainability.

Better, faster, cheaper, safer, and smarter

These solutions allow MDOT to more cost-effectively reduce congestion, increase safety, and provide Michigan residents with noticeable benefits NOW.

To learn more about MDOT's operational solutions, please visit: www.michigan.gov/mdot



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The Elevator Speech

- ▶ Preparing an “elevator speech” is an invaluable way to make the business case.
- ▶ Elevator speeches are typically delivered verbally in one minute or less.
- ▶ Generally, key points in the business case can be shortened to an elevator speech.
- ▶ The following components are important to include:
 - » The overall objective of the IOP changes.
 - » The top priority IOP change.
 - » The basic/rationale for making this IOP change.
 - » If applicable, a reference to a documented business case.





CONCLUSIONS



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Key Takeaways

- ▶ IOP changes are critical to the continuous improvement of TSMO programs.
- ▶ Making IOP changes is hard so a business case is often needed.
- ▶ A series of characteristics should be considered in developing an effective business case.
- ▶ The “seven sections” detailed in this presentation provide a process for building an effective business case.
- ▶ The business case format and language should be tailored to the target audience.





QUESTIONS?



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Speaker Contact Information

- ▶ FHWA Government Task Manager, Joe Gregory, joseph.Gregory@dot.gov
- ▶ Cambridge Systematics team:
 - » Erin Flanigan, eflanigan@camsys.com
 - » Katie Blizzard, kblizzard@camsys.com



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