



Accelerating solutions for highway safety, renewal, reliability, and capacity

Regional Operations Forum

Setting the Stage

The Transportation Environment is Changing

- Increased reliance on information and technology
- Technology also offers opportunities – enhanced operations and regional multi-modal integration
- Increasing customer needs and expectations
- Growing emphasis on outcomes and performance measurement
- MAP 21 requirements
- Reduced financial resources

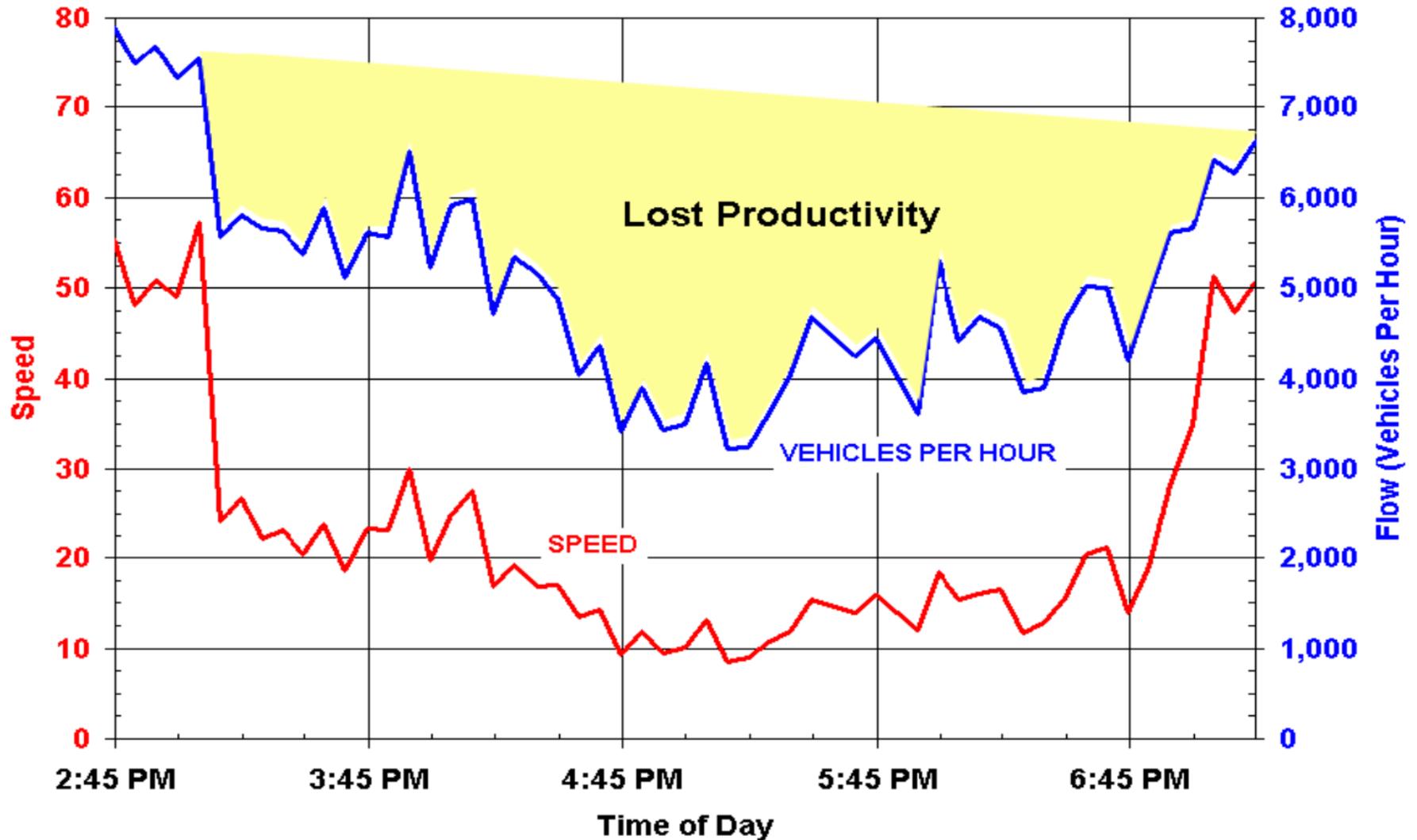


What is TSM&O?

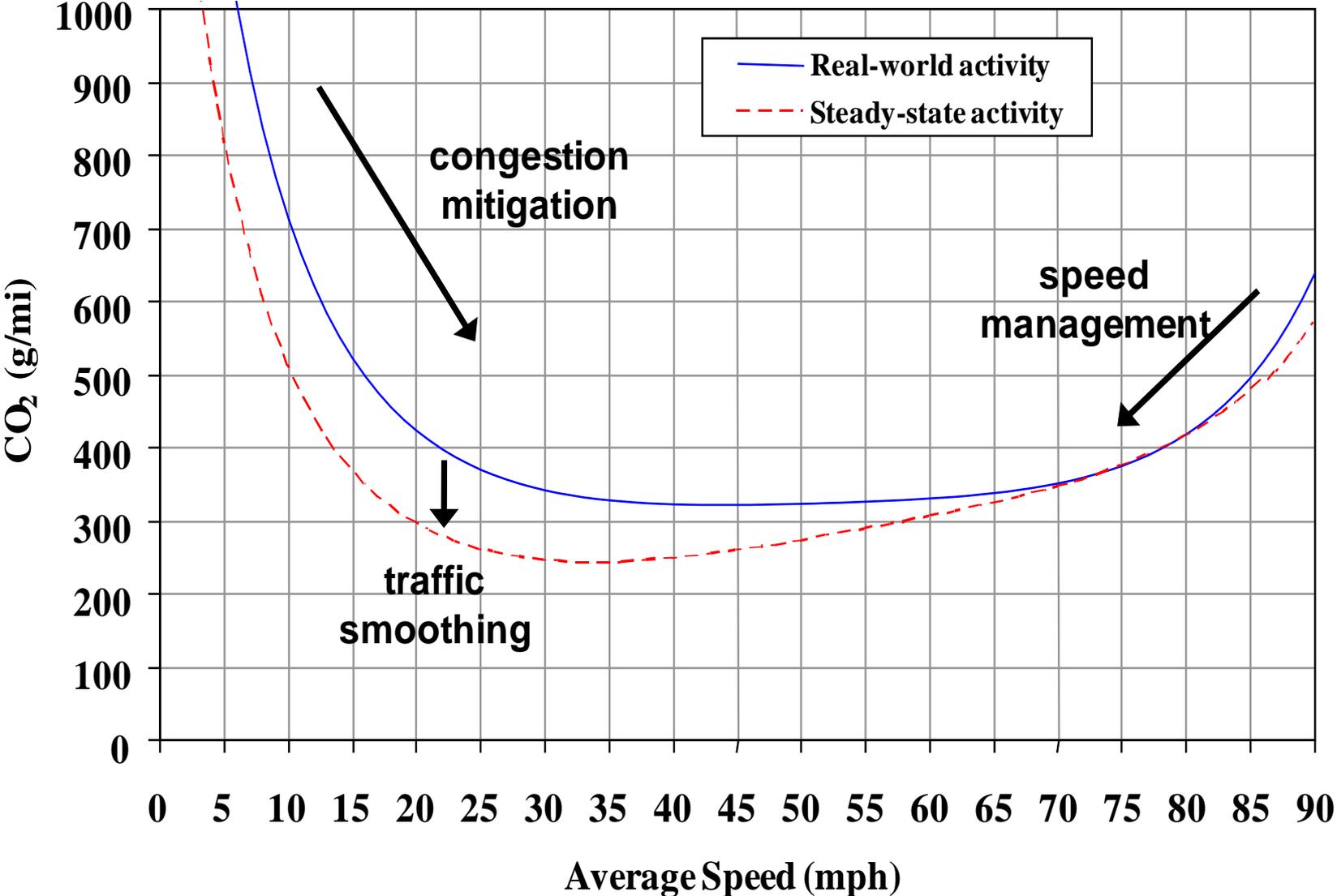
Transportation Systems Management and Operations

- “Integrated strategies to optimize the performance of existing infrastructure through the implementation of multimodal and intermodal, cross-jurisdictional systems, services, and projects” (MAP 21)
- Regional integration an important consideration
 - Many strategies are multi-modal
 - All require inter-agency collaboration, including coordinating with enforcement and first responders

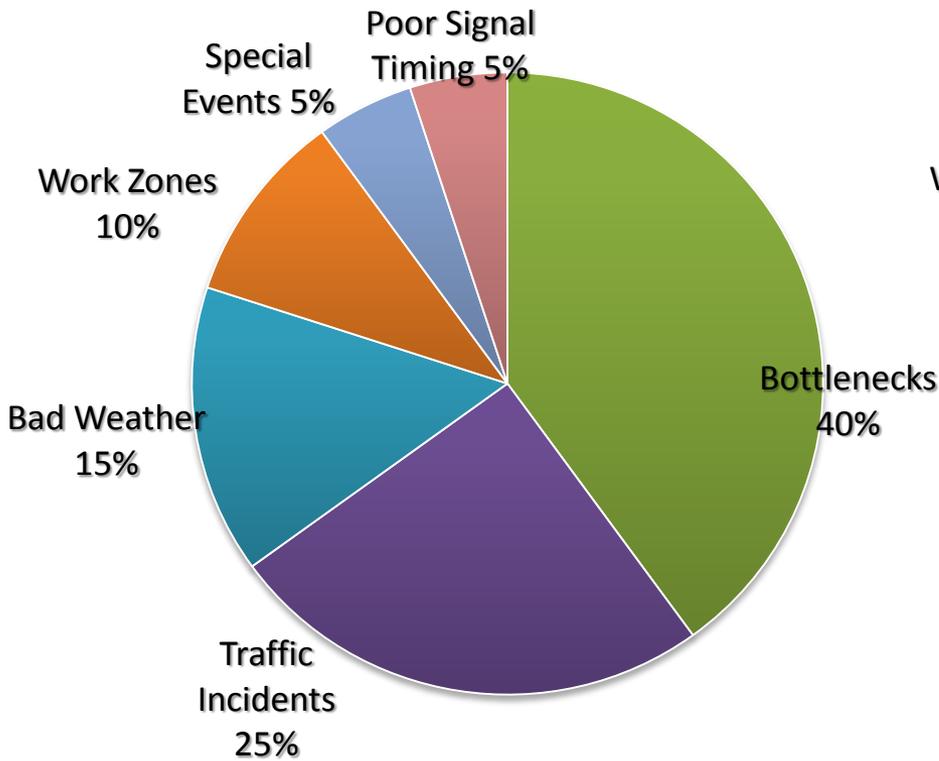
Why Bother?: Unmanaged Traffic Impacts with Limited Capacity Options



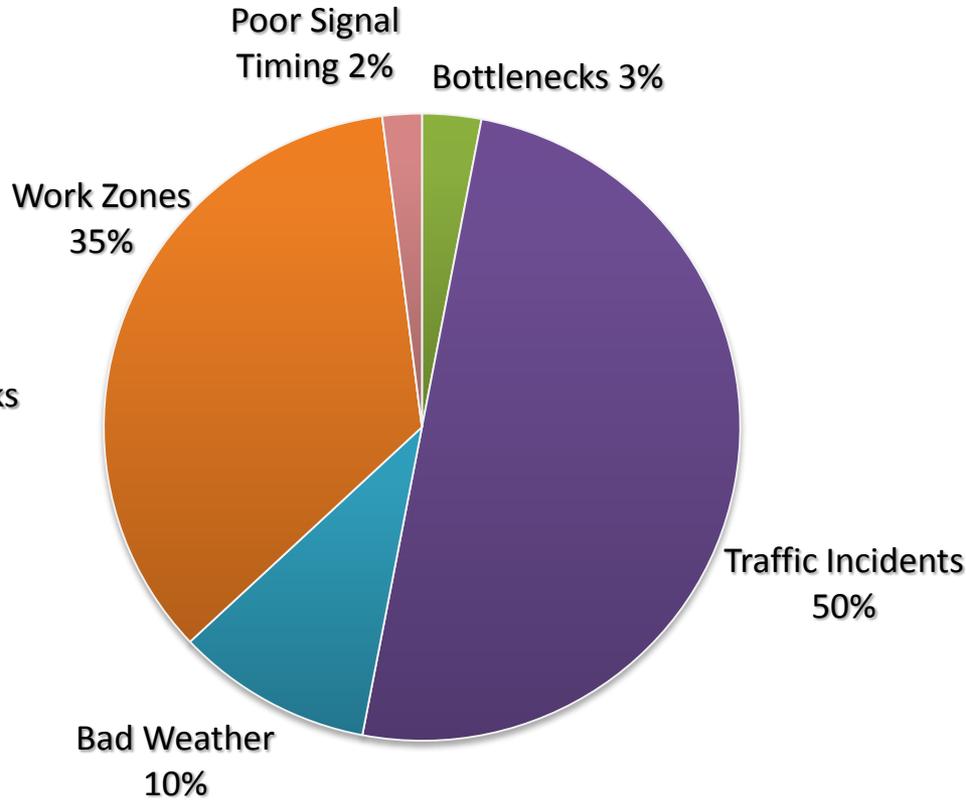
Why Bother?: TSMO and GHG Reductions



Why Bother? Causes of Congestion



URBAN



RURAL

Majority of delay/most unreliability due to “non-recurring” events NOT addressed by new capacity

Research & Experience: Explanation of More/Less Effective TSMO Activities

- Key Finding
 - Surprise!! It *wasn't* (primarily) \$\$
 - What it was: Whether TSM&O was treated as a formal “program” (like DOT’s legacy programs)
- ***What are the characteristics of the conventional DOT formal “program”?***

What YOU said: – Needed capabilities you identified: How it Relates to this Capability Maturity Discussion

Agency Challenges you Identified	Dimensions of Agency Capability
TSM&O Maintenance funding, asset management	Planning & Programming
Technology upgrades, standards & interoperability issues	Systems & Technology
Making the “Business Case” for TSM&O with key stakeholders	Performance/Culture
Culture – agency legacy, public/policy understanding, support	Culture
Internal stove-piping (coordination problems)	Organization/Collaboration
HQ vs. district/regional point of view	Organization, Culture
Focus on “sustainability” – urban and rural	Planning & Programming
Device interoperability and procurement	Systems & Technology
Lack of strategic plan, program	Planning & Programming
New forms of relationships with CMAs, locals, PSAs	Collaboration
Staffing shortfalls, retirement, recruitment, retention	Organization & Staffing
Lack of support for adequate, flexible funds	Culture/Planning & Programming

How TSM&O Requires Different Capabilities from “Legacy” Programs

Legacy Programs

(project dev./maint)

- Clear mission
- Program/plan/budget
- Processes standardized
- Stable technology
- Clear Performance (cost and schedule)
- Staff roles clear/coordinated
- Roles/relationships established

TSM&O (Typical)

- Mission fuzzy
- No formal program/budget
- Processes champion-dependent
- Dynamic technology
- Some PM (outputs) not outcomes
- Stovepiping
- External collaboration challenge

Why We Are Here: Importance of Agency “Capabilities” to Effectiveness to Overall TSM&O Program

Example: ICM:

- ✓ Shared Business Case
- ✓ Incremental program planning
- ✓ Performance management (and in real time)
- ✓ Staff technical/management capabilities: technology/conops/arch/DSS
- ✓ Clear agency unit authorities and responsibilities
- ✓ Multi-jurisdictional alignment/collaboration (MOUs, training)
- ✓ Multiple networks (arterials as well as freeways, transit)
- ✓ Interoperable communications
- ✓ Legislative authorization
- ✓ Sustainable funding
- ✓ Clear lines of responsibility/command
- ✓ Pre-defined procedures/protocols
- ✓ Private sector involvement/management

The “Dimensions” of Capability

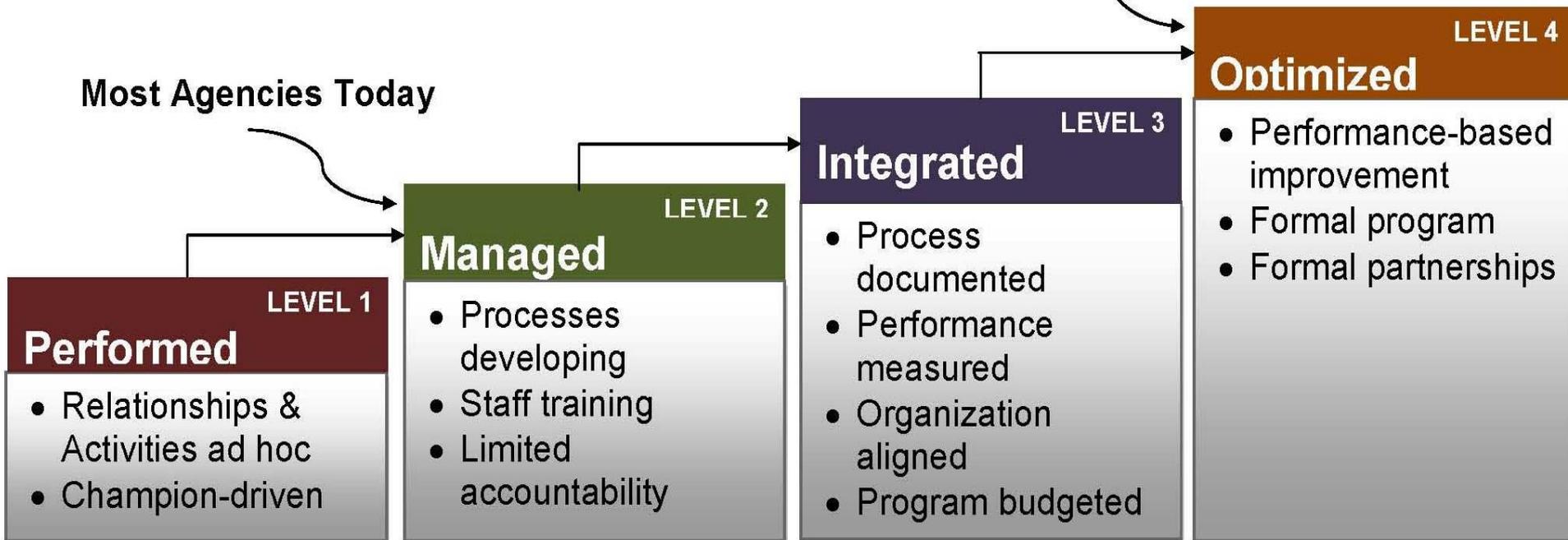


- Business and technical processes support strategies
- Organization and relationships support processes

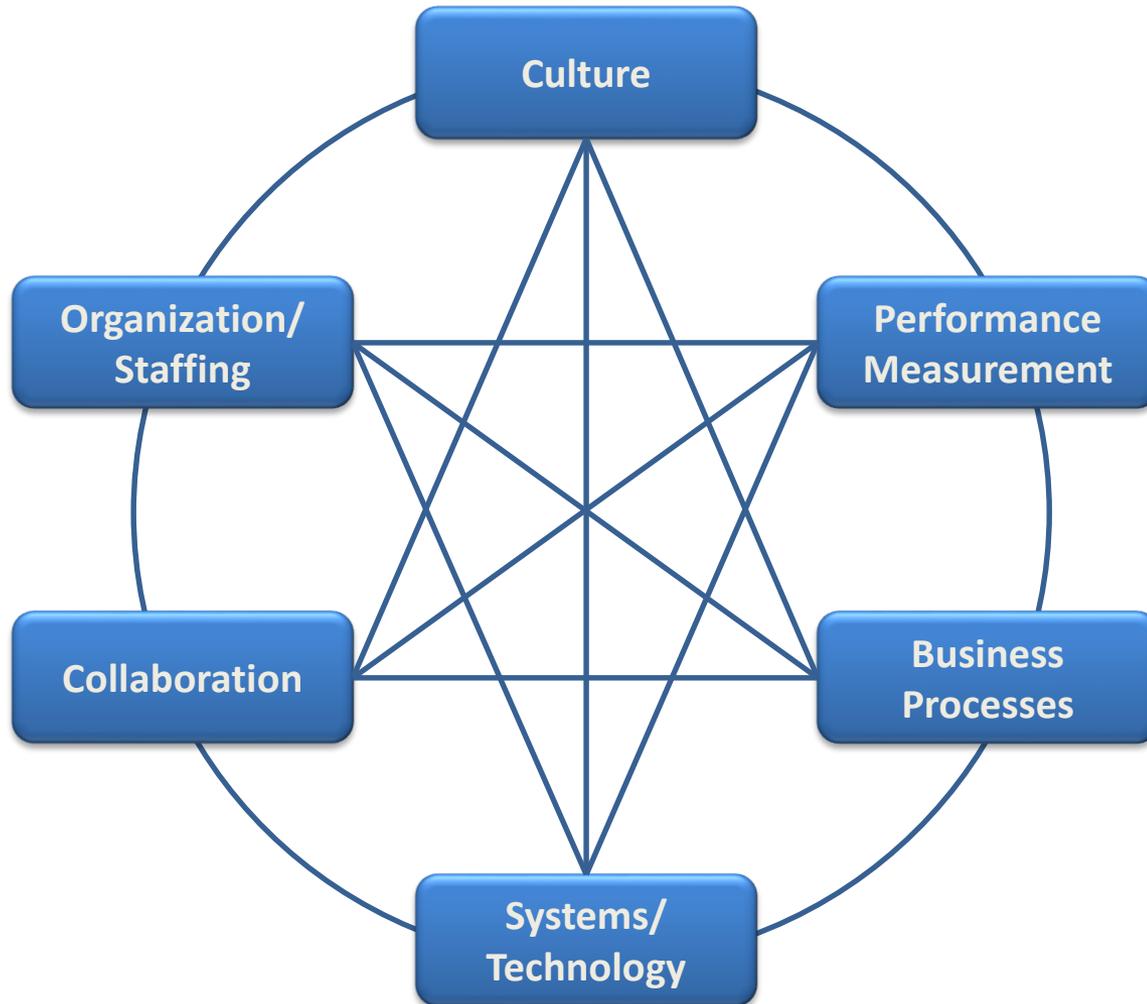
Levels of Capability Maturity

Ultimate Goal for the Future

Most Agencies Today



Synergism among Dimensions



Lessons Learned

- Continuous capability improvement to support more effective programs is Key target
- Processes and institutional or organizational arrangements are critical pre-conditions to improving effectiveness
- They cut across all strategy applications in a program – at most scales
- The lowest capability dimension is usually the one that is holding you back
- Resources are key constraint – but many key improvements are not costly – they require assessment and management

Workshop Capability Self-Assessments

Dimension	Capability Self-Assessment			
	Level 1 Performed	Level 2 Managed	Level 3 Integrated	Level 4 Optimizing
Business Processes	11	10	2	0
Systems and Technology	7	12	3	1
Performance Measurement	9	11	3	0
Culture	8	11	4	0
Organization and Staffing	8	9	6	0
Collaboration	4	12	6	1

State of the Practice

Business Processes

- Few statewide or MPO TSM&O plans or budgets
- Program planning discouraged – lack funding/
program status
- TSM&O not integrated into project development process
- Planners don't know operations and operators
don't plan
- A few good examples, especially at metro level

Business Processes Implementation Plans

- Define/develop TSM&O “program plan”
 - Business case
 - Capabilities improvements
 - Strategic objectives/investments
- Start at corridor/regional level
- Improve TSM&O planning methods/capacities
- Integrate TSM&O into statewide plan/program
- Insert TSM&O into project development process

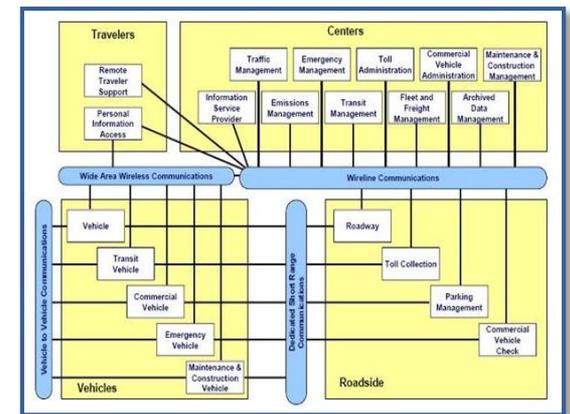
State of the Practice

Systems and Technology

- Architectures/Concepts of Operations exist – need updating/documentation
- New applications, technologies require ConOps updates, new partners, raise interoperability challenges
- Heavy dependence on consultants
- Challenge of coordination with State Information Technology (IT) departments
- Conventional procurement processes often inappropriate

Systems and Technology Implementation Plans

- Update statewide and regional architectures in keeping with new applications, technologies, and partners
- Consider implications of Integrated Corridor Management and Connected Vehicle applications
- Develop cooperative task force approach to working with State IT agencies



State of the Practice

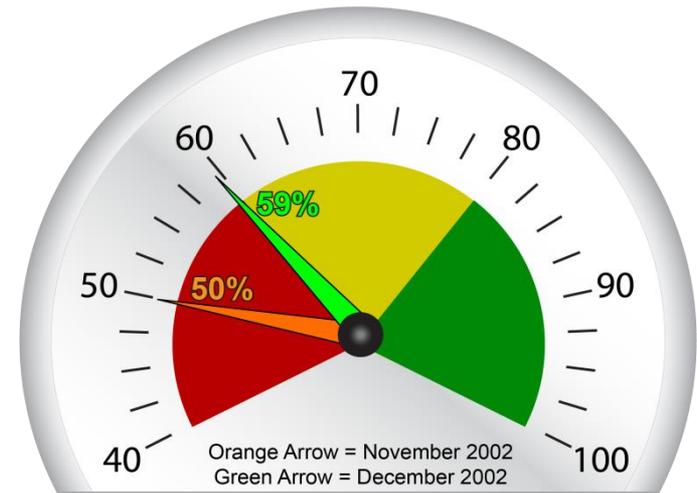
Performance Measurement

States aware of MAP-21 PM requirements – developing measures, but:

- Measures largely output (events) – *not* customer outcomes
- Data and analytic challenges impede progress
- Measures not used for improving effectiveness (beyond incidents/weather)
- Limited performance-based program accountability (internal or external)

Performance Measurement Implementation Plans

- Create comprehensive performance measurement system with
 - Definitions and measures
 - Related data and analytics
 - Targets
- Incorporate PM in planning and programming processes
- Identify/support internal “clients” for use of measurement
- Use PM business case to communicate benefits of TSM&O to upper management and the public



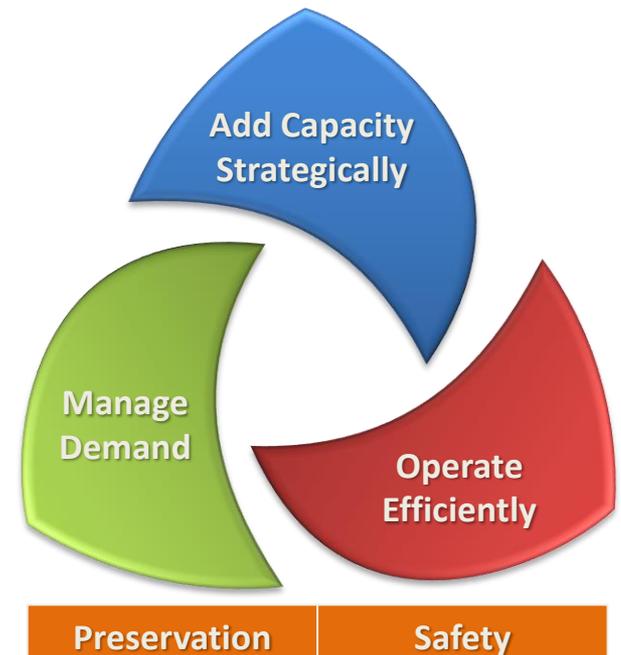
State of the Practice

Culture

- Legacy civil engineering culture with a capital project orientation
- “Can’t build our way out of congestion” accepted but TSM&O business case not widely understood
- Few agencies using operational objectives at policy level
- TSM&O not a “program” – no line item budget/division status
- New technology raising profile of TSM&O (and public expectations)

Culture Implementation Plans

- Develop and communicate business case to top management
- Conduct internal (non-TSM&O) staff familiarization
- Convene internal group to set TSM&O vision and priorities
- Develop outreach program to familiarize public with TSM&O role/benefits



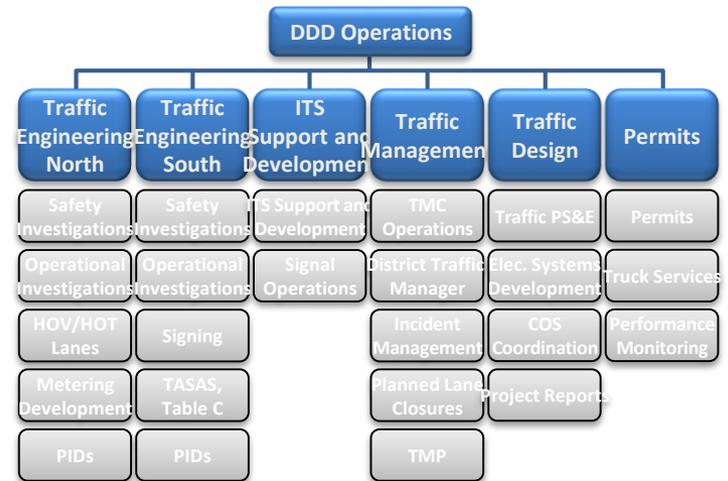
State of the Practice

Organization and Staffing

- TSM&O functions stovepiped – engineering vs. operations
- Middle manager “champions” 2 to 3 levels down in headquarters/regions
- Variation in degree of centralization vs. decentralization
- TSM&O staff small, not a career path, training limited
- Technical capacities difficult to recruit/retain, often outsourced

Organization and Staffing Implementation Plans

- Modify organizational structure to clarify authority/responsibility
- Identify in core capacities needed (vs. outsourcing)
- Ascertain needed skills positions, training/mentoring resources
- Establish career paths and competitive conditions of employment



State of the Practice

Collaboration

- Staff recognize criticality of external collaboration
- Some formal agreements developed but interagency collaboration is substantially informal
- Need for alignment regarding performance objectives, needed capacities, and resources
- Co-location and co-training have a positive impact
- Outsourcing widely used and increasing for technical functions

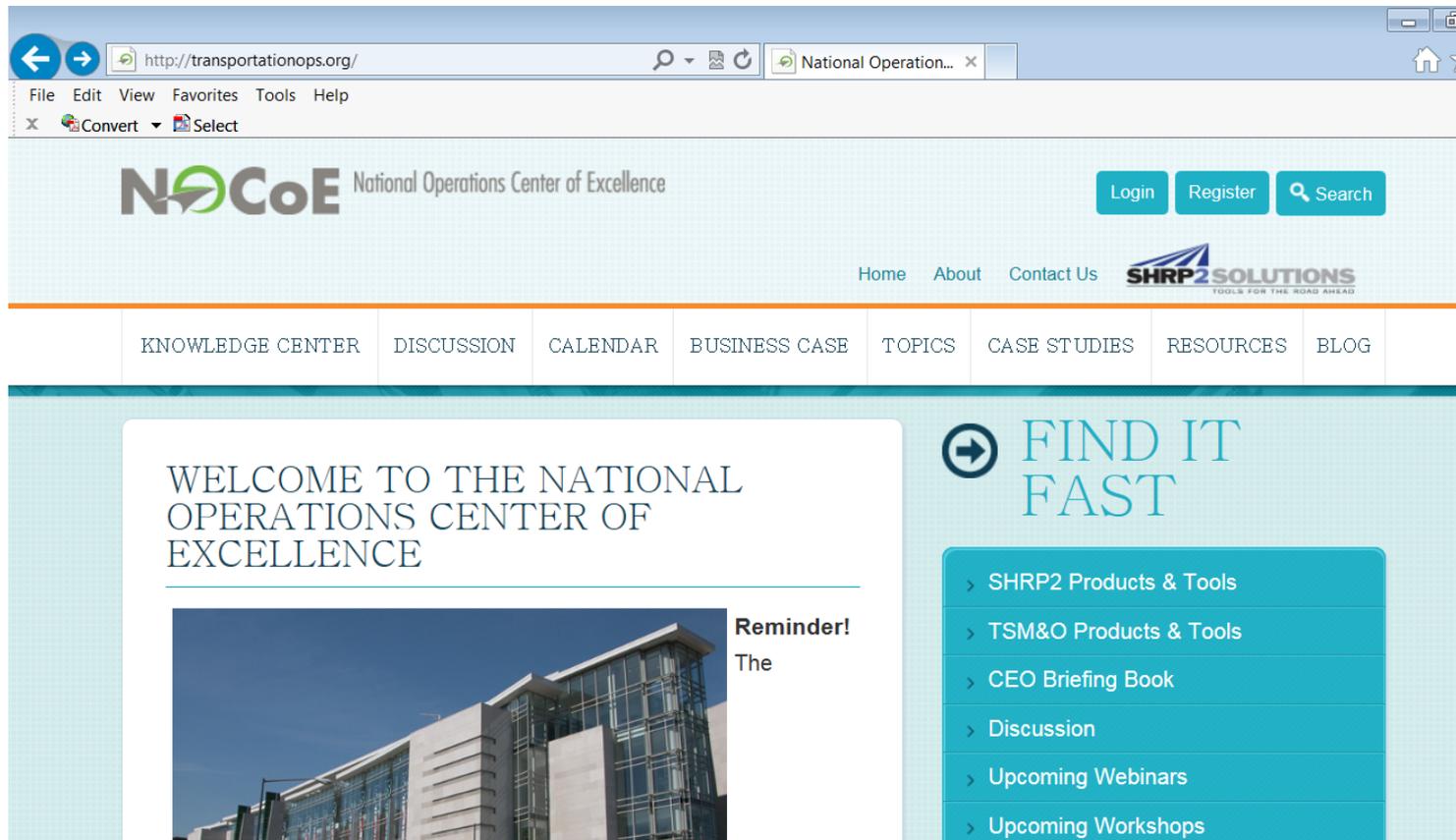


Collaboration Implementation Plans

- Execute/renew agreements with public safety agencies for Incident Management
- Establish forum to improve interagency relationships
- Use corridor projects as pilot for new collaborative operational strategies
- Participate in peer exchanges to share effective public-private partnership arrangements
- Identify more effective forms of public/private partnerships

National Operations Center of Excellence

- www.transportationops.org



The screenshot shows a web browser window displaying the homepage of the National Operations Center of Excellence (NCoE). The browser's address bar shows the URL <http://transportationops.org/>. The website header features the NCoE logo, navigation links for Home, About, and Contact Us, and buttons for Login, Register, and Search. A secondary navigation bar includes links for Knowledge Center, Discussion, Calendar, Business Case, Topics, Case Studies, Resources, and Blog. The main content area is divided into two sections: a welcome message and a 'Find It Fast' sidebar. The welcome message reads 'WELCOME TO THE NATIONAL OPERATIONS CENTER OF EXCELLENCE' and includes a 'Reminder!' section with a photo of a modern building. The 'Find It Fast' sidebar lists several resources: SHRP2 Products & Tools, TSM&O Products & Tools, CEO Briefing Book, Discussion, Upcoming Webinars, and Upcoming Workshops.

http://transportationops.org/

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TOOLS FOR THE ROAD AHEAD

KNOWLEDGE CENTER DISCUSSION CALENDAR BUSINESS CASE TOPICS CASE STUDIES RESOURCES BLOG

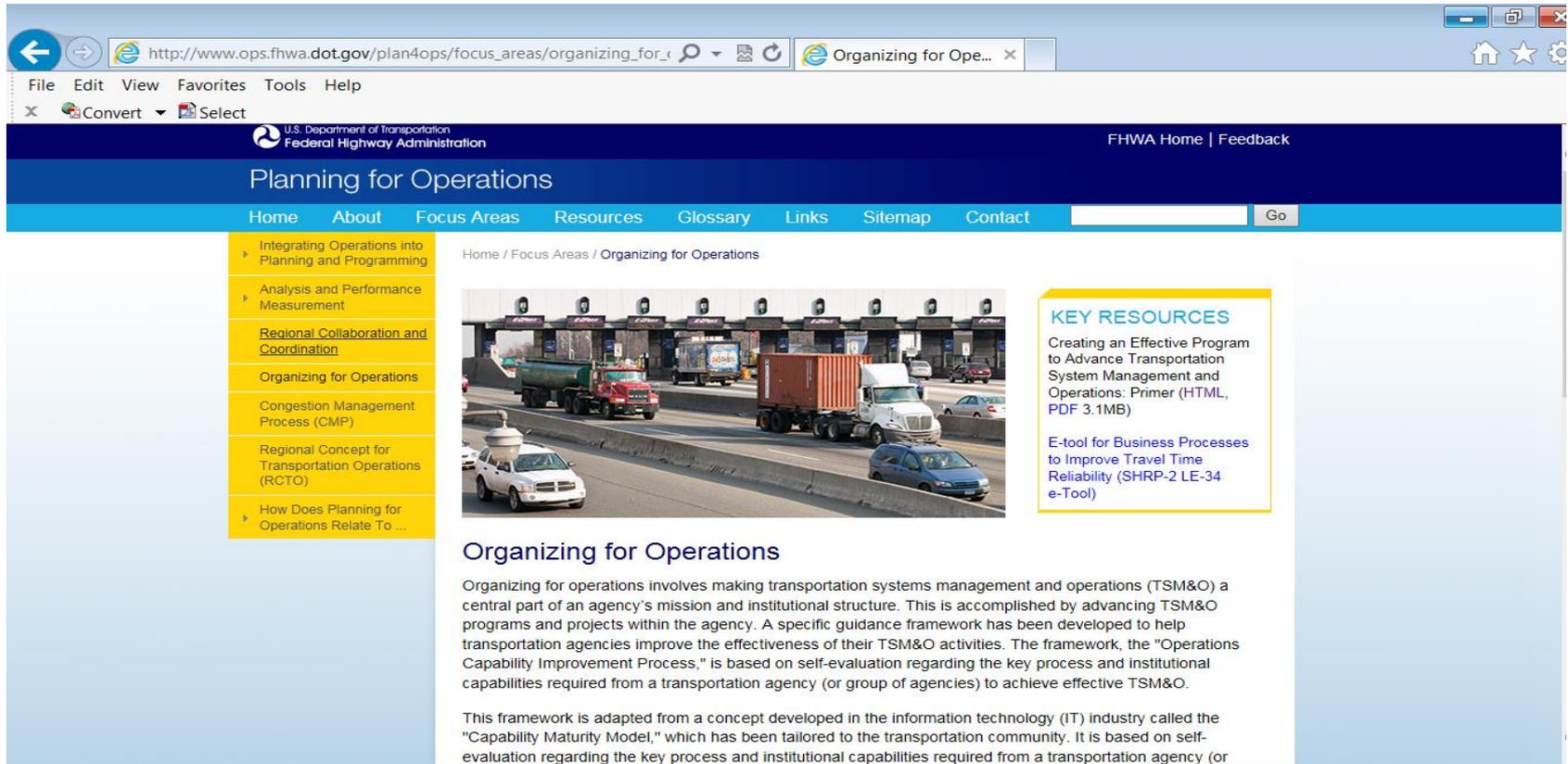
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FHWA Planning and Organizing for Operations



The screenshot shows a web browser window displaying the FHWA website. The address bar shows the URL: http://www.ops.fhwa.dot.gov/plan4ops/focus_areas/organizing_for_. The page header includes the U.S. Department of Transportation Federal Highway Administration logo and the text "FHWA Home | Feedback". The main navigation bar contains links for Home, About, Focus Areas, Resources, Glossary, Links, Sitemap, and Contact. A search bar is also present.

The page content is titled "Planning for Operations" and "Organizing for Operations". A left sidebar contains a list of navigation items:

- Integrating Operations into Planning and Programming
- Analysis and Performance Measurement
- Regional Collaboration and Coordination
- Organizing for Operations
- Congestion Management Process (CMP)
- Regional Concept for Transportation Operations (RCTO)
- How Does Planning for Operations Relate To ...

The main content area features a photograph of a highway with a truck and a car. Below the photo is the heading "Organizing for Operations" and the following text:

Organizing for operations involves making transportation systems management and operations (TSM&O) a central part of an agency's mission and institutional structure. This is accomplished by advancing TSM&O programs and projects within the agency. A specific guidance framework has been developed to help transportation agencies improve the effectiveness of their TSM&O activities. The framework, the "Operations Capability Improvement Process," is based on self-evaluation regarding the key process and institutional capabilities required from a transportation agency (or group of agencies) to achieve effective TSM&O.

This framework is adapted from a concept developed in the information technology (IT) industry called the "Capability Maturity Model," which has been tailored to the transportation community. It is based on self-evaluation regarding the key process and institutional capabilities required from a transportation agency (or

On the right side of the page, there is a "KEY RESOURCES" box with the following text:

KEY RESOURCES
Creating an Effective Program to Advance Transportation System Management and Operations: Primer (HTML, PDF 3.1MB)
E-tool for Business Processes to Improve Travel Time Reliability (SHRP-2 LE-34 e-Tool)