SHRP2

STRATEGIC HIGHWAY RESEARCH PROGRAM

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

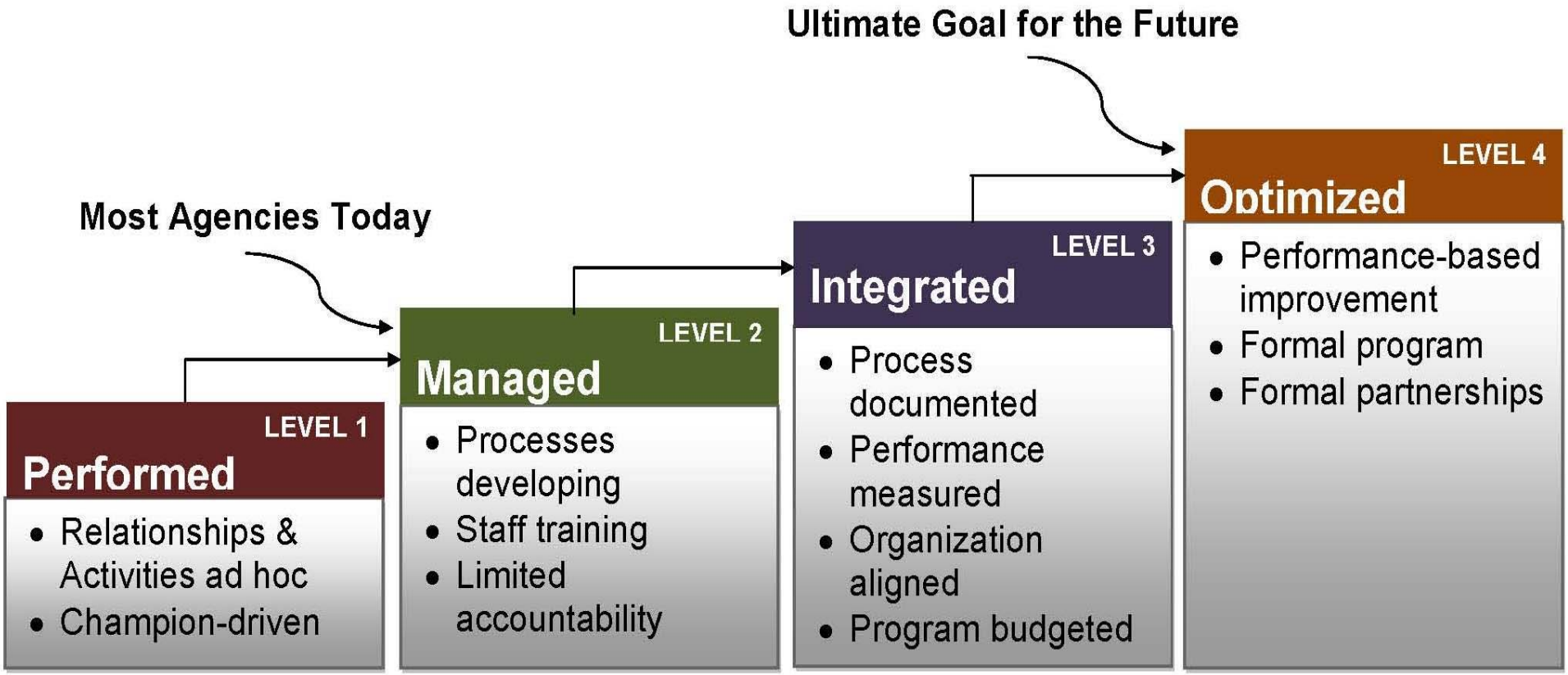
- "Integrated strategies to optimize the performance of existing infrastructure through the implementation of multimodal and intermodal, cross-jurisdictional systems, services, and projects" (MAP 21)

- Regional integration an important consideration
  - Many strategies are multi-modal
  - All require inter-agency collaboration, including coordinating with enforcement and first responders

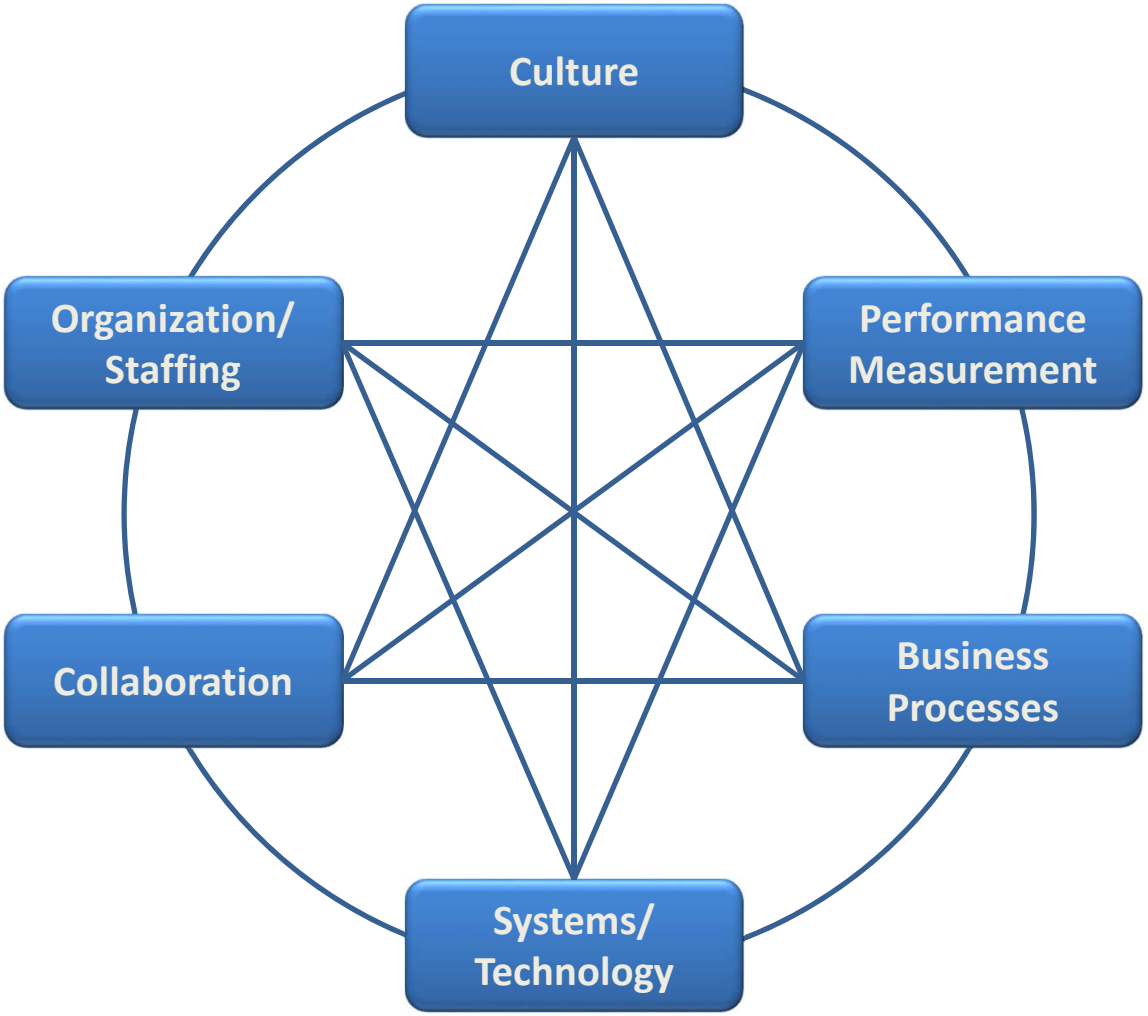
The “Dimensions” of Capability

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

Levels of Capability Maturity



Synergism among Dimensions

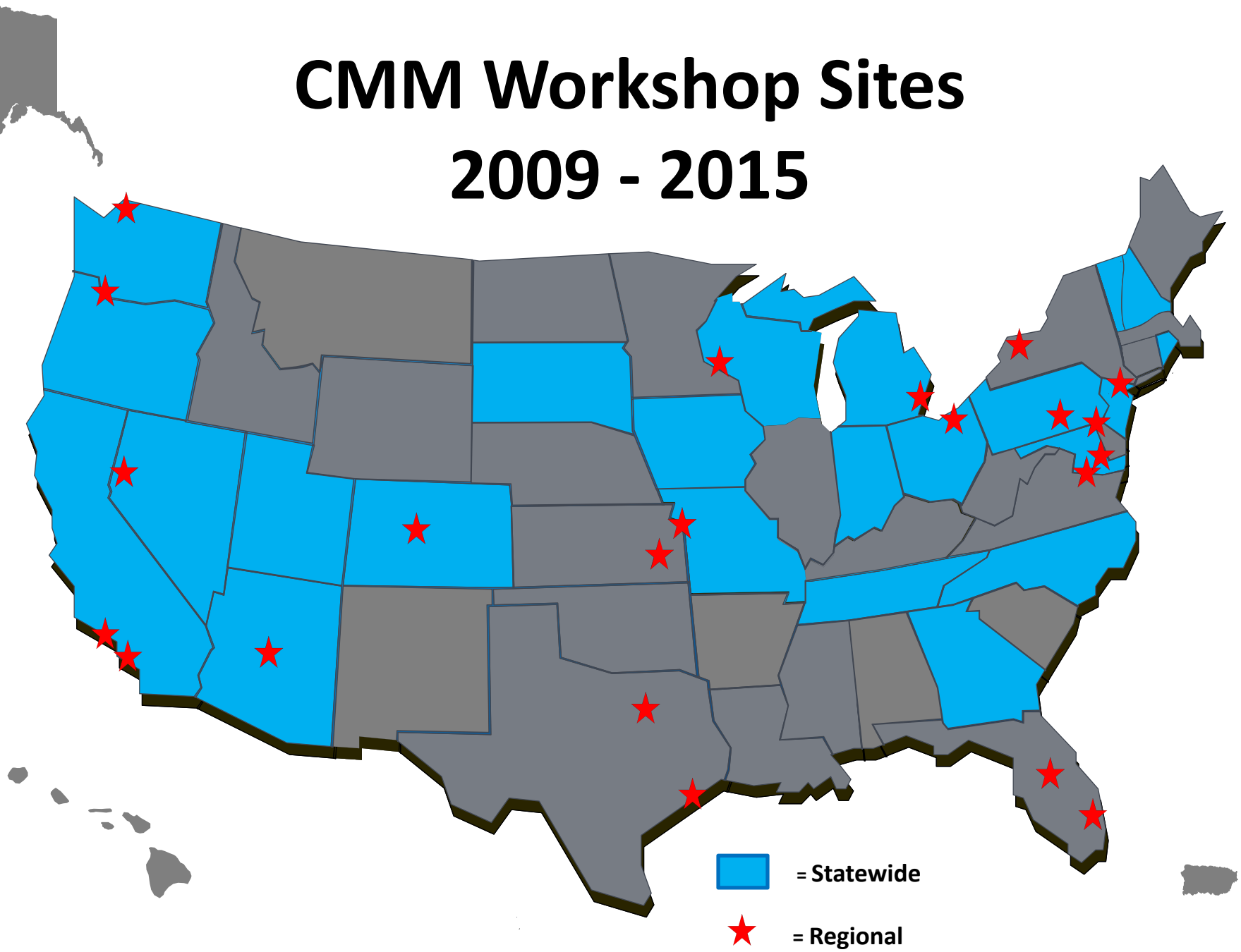


The Capability Maturity Model

Capability Level Self Evaluation Structure				
DIMENSIONS	LEVEL 1 PERFORMED	LEVEL 2 MANAGED	LEVEL 3 INTEGRATED	LEVEL 4 OPTIMIZING
Business Processes		X		
Systems & Technology			X	
Performance Measurement	X			
Culture			X	
Organization/ staffing		X		
Collaboration			X	

Lowest level is constraint

CMM Workshop Sites
2009 - 2015



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

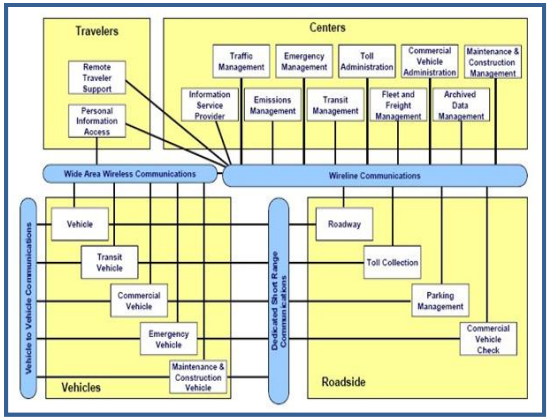
- Architectures/Concepts of Operations exist – need updating/documentation
- New applications, technologies require ConOps updates, new partners, raise interoperability challenges
- Heavy dependence on consultants
- Challenge of coordination with State Information Technology (IT) departments
- Conventional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



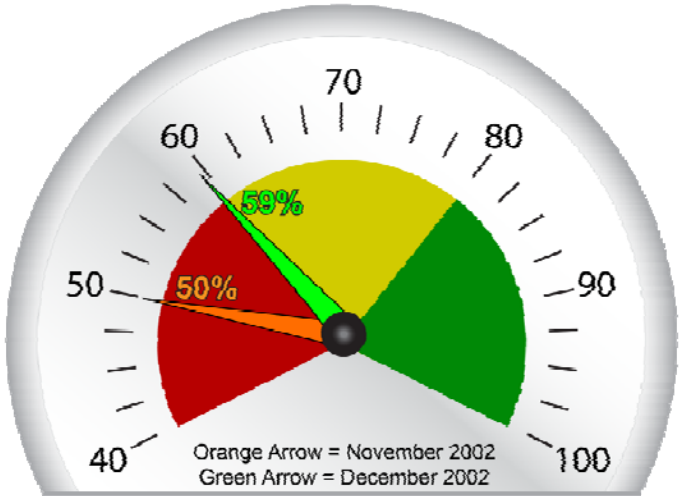
State of the Practice
Performance Measurement

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

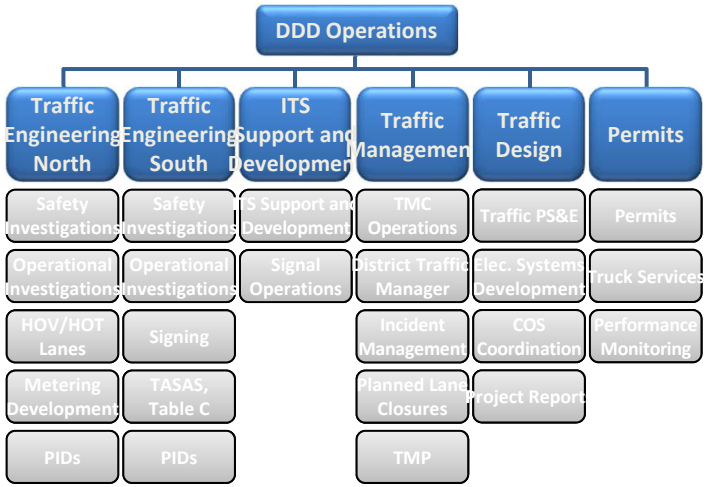
State of the Practice

Organization and Staffing

- TSM&O functions stovepiped – engineering vs. operations
- Variation in degree of centralization vs. decentralization
- Middle manager "champions" 2 to 3 levels down in headquarters/regions
- 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

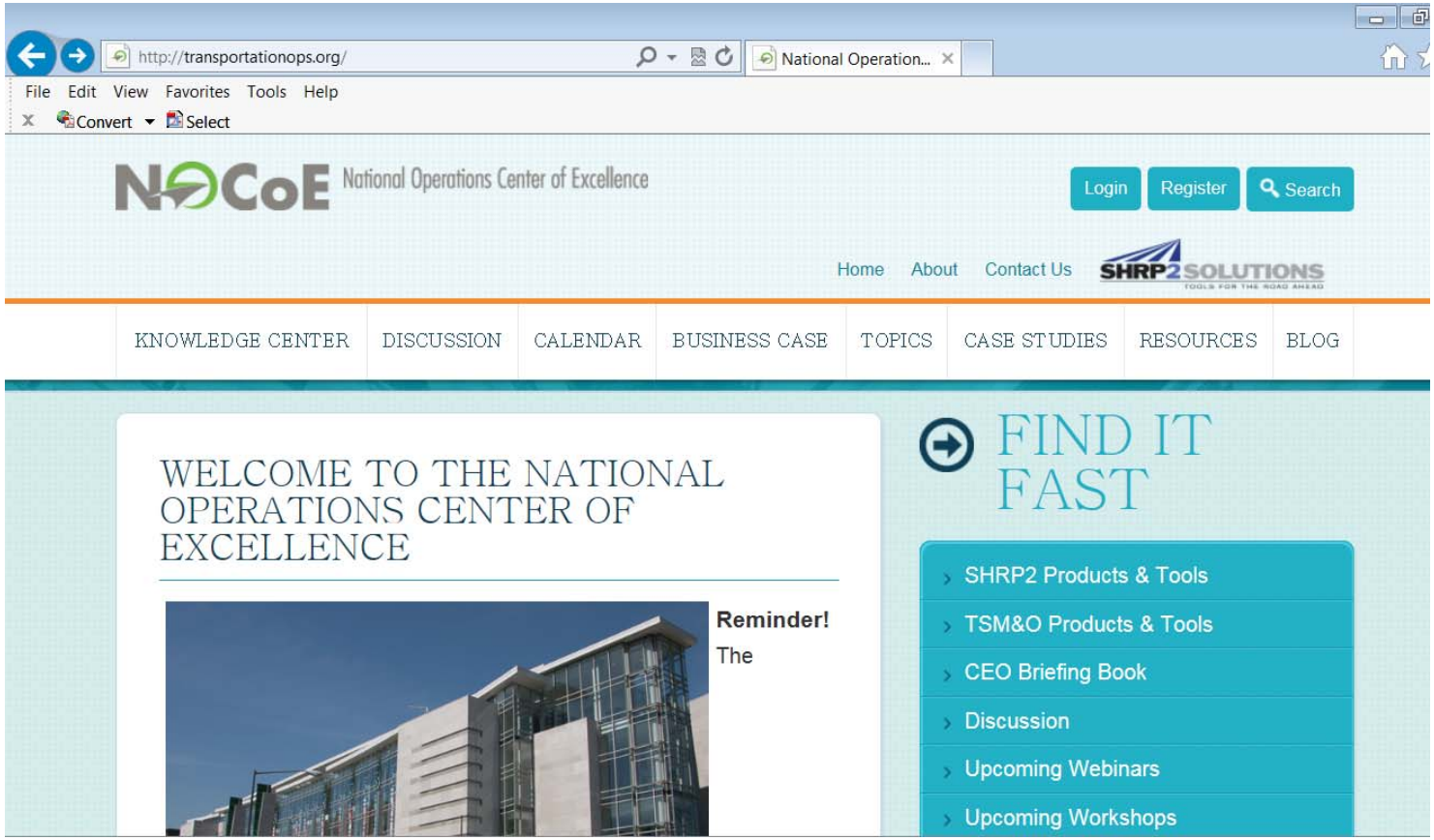
- Execute/renew agreements with public safety agencies for Incident Management
- Establish forum to improve interagency relationships
- Use corridor projects as pilot for new collaborative operational strategies
- Participate in peer exchanges to share effective public-private partnership arrangements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

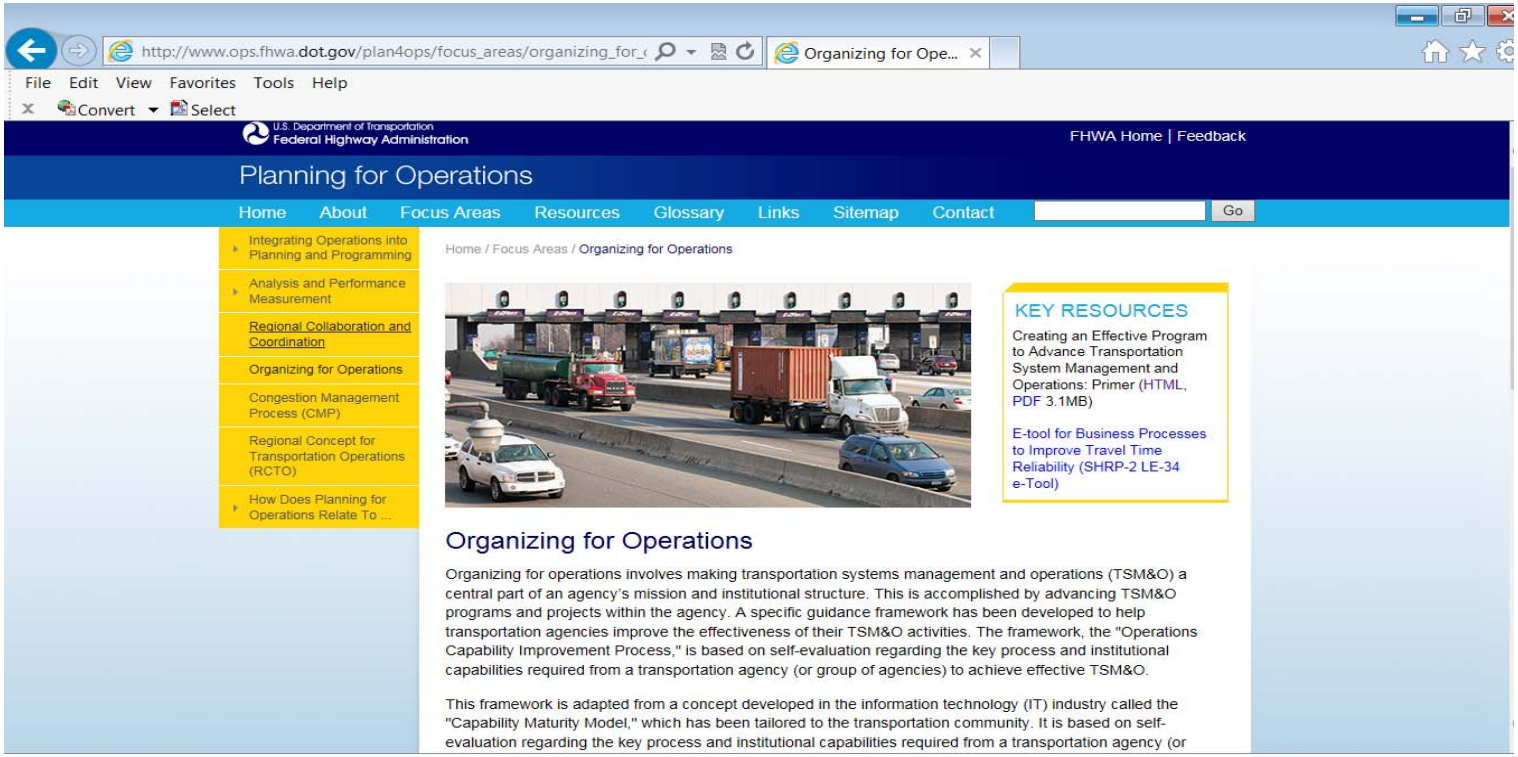
Summary Reports

- 6 White Papers
  - 1 for each CMM Dimension
- Technical Summary Report
- Webinar for each CMM Dimension
- FHWA and National Operations Center of Excellence websites

National Operations Center of Excellence

- www.transportationops.org



FHWA Planning and Organizing for Operations

- http://www.ops.fhwa.dot.gov/plan4ops/focus_areas/organizing_for_op.htm