



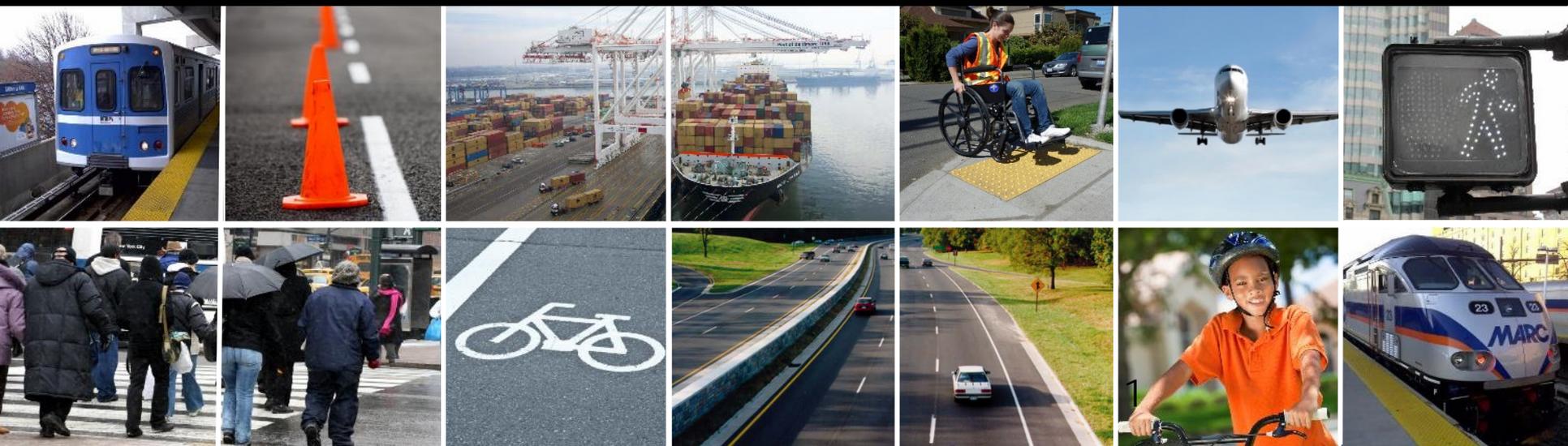
January 31, 2019

Maryland Transportation Systems Management and Operations (TSMO) Program - Innovation Showcase

Joey Sagal & Subrat Mahapatra
MDOT SHA Office of CHART and ITS Development



Continuous Quality Improvement
Maryland's Transportation Industry



What is TSMO?



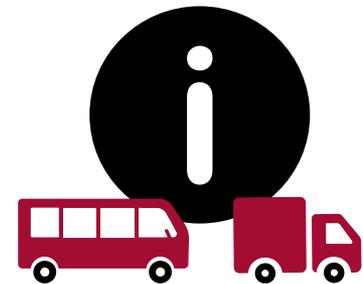
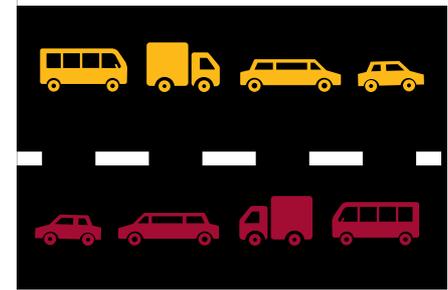
MARYLAND TRANSPORTATION SYSTEMS MANAGEMENT & OPERATIONS

- Integrated approach to planning, engineering, operations, and maintenance.
- Effectively manage and operate existing facilities and systems to maximize their full service potential.

Why TSMO in Maryland? Demand Side

- Vehicle miles traveled (VMT) and congestion levels at **all time high** - one of the most congested regions in US
- MD will have **1 million more people** by 2040, which will result in **30% more VMT** and **doubling of truck VMT**
- **Customer needs and expectations** are changing – faster, reliable and flexible
- **Technology** is playing a huge role for travel decisions (commute, shop, other)

Need to think differently.



What is TSMO in Maryland? Supply Side

- System operating at/over capacity
- Over-saturated conditions lead to higher unreliability
- **Multiple priorities competing for limited funding** (Safety, State of Good Repair, Mobility, Capacity, Economy)
- **Technology playing a key role** – efficiency, reliability and system of systems

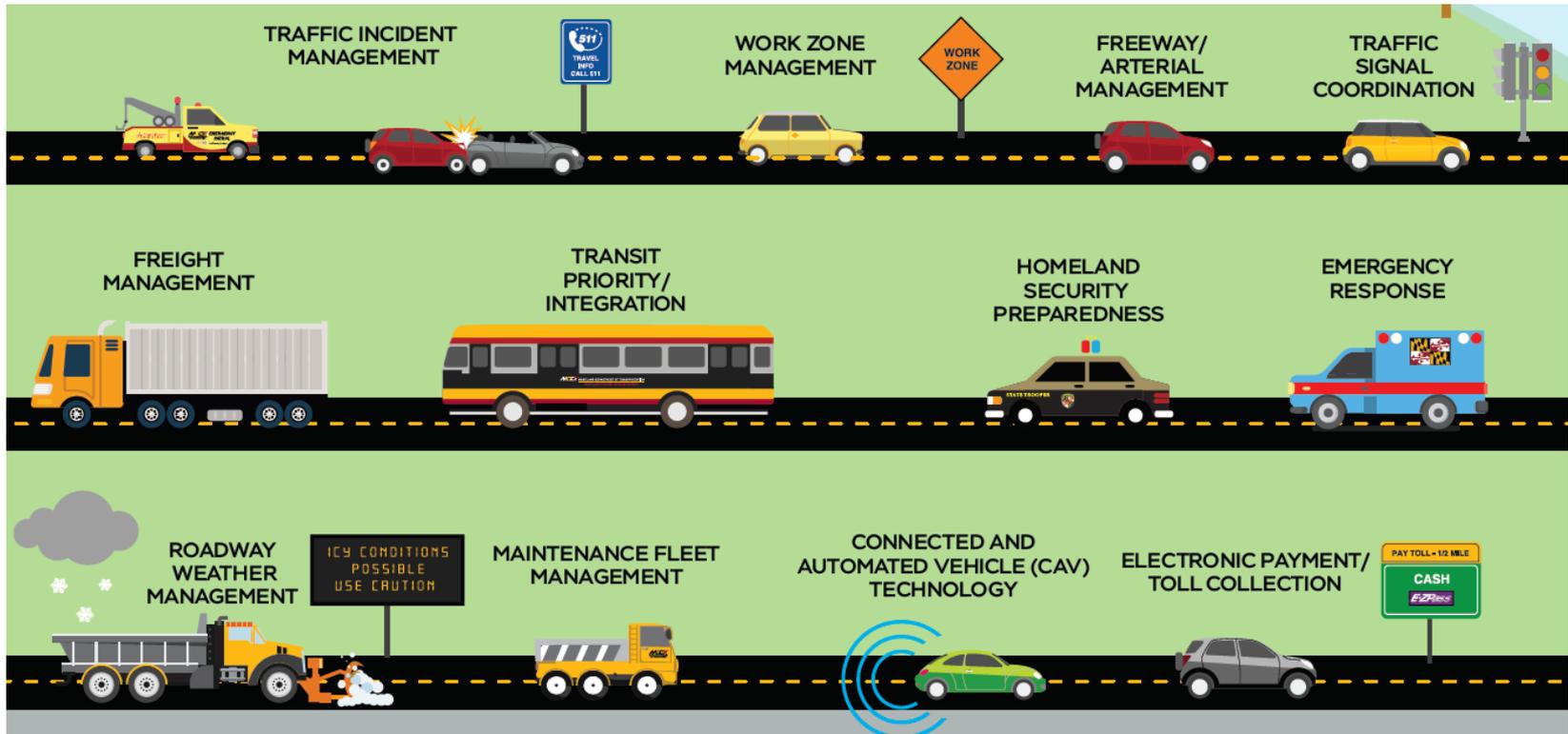


Focus on “Door
to Door”
Customer
Experience



TSMO AT MDOT SHA

Strong TSMO Foundations – Looking Beyond Operations



Think Differently: Planning, Engineering, Implementation, Operations & Maintenance as ONE WHOLE

Leveraging Significant TSMO Projects



**SMART SIGNALS
TRAFFIC RELIEF PLAN**



**I-695 (I-70 TO MD 43)
TSMO PROJECT**



**BALTIMORE AREA
TRAFFIC RELIEF PLAN**



**I-270 INNOVATIVE
CONGESTION
MANAGEMENT PROJECT**



TRAFFIC RELIEF PLAN

**MARYLAND
TRAFFIC RELIEF PLAN**

95 695 270 495 295 Smart Signals

MDOT SHA TSMO Program



- Builds on MDOT SHA Strong TSMO Foundations
- TSMO Strategic Plan provides Vision, Purpose, Goals, Objectives & Strategies
- Focus on Integration: Institutional, Operational & Technical
- Governance Structure: Executive Committee, Working Group & Task Forces
- Institutionalize TSMO across MDOT SHA

2018 TSMO Strategic Plan



Our Vision

A customer-driven leader working to provide safe, efficient, and innovative transportation solutions that meet or exceed customer expectations.



Our Purpose

Implement a sustainable, organization-wide TSMO Program at MDOT SHA that fully maximizes the ability of Maryland's transportation system to consistently move people and goods.

GOAL 1



**BUSINESS PROCESSES
& COLLABORATION**

GOAL 2



SYSTEMS & TECHNOLOGY

GOAL 3



**DATA, ANALYSIS &
PERFORMANCE MANAGEMENT**

GOAL 4



**CUSTOMER EXPERIENCE
& ENGAGEMENT**

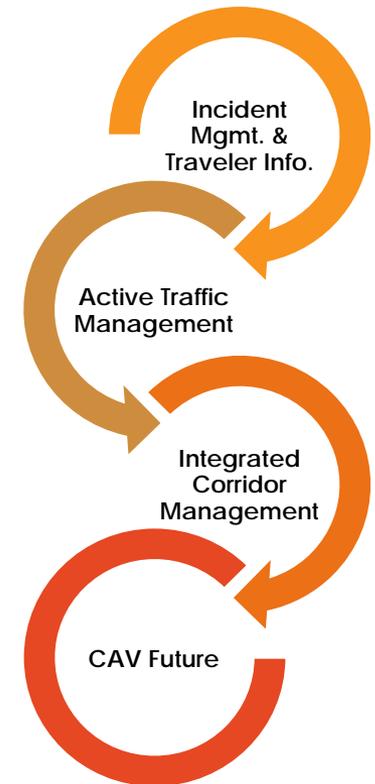
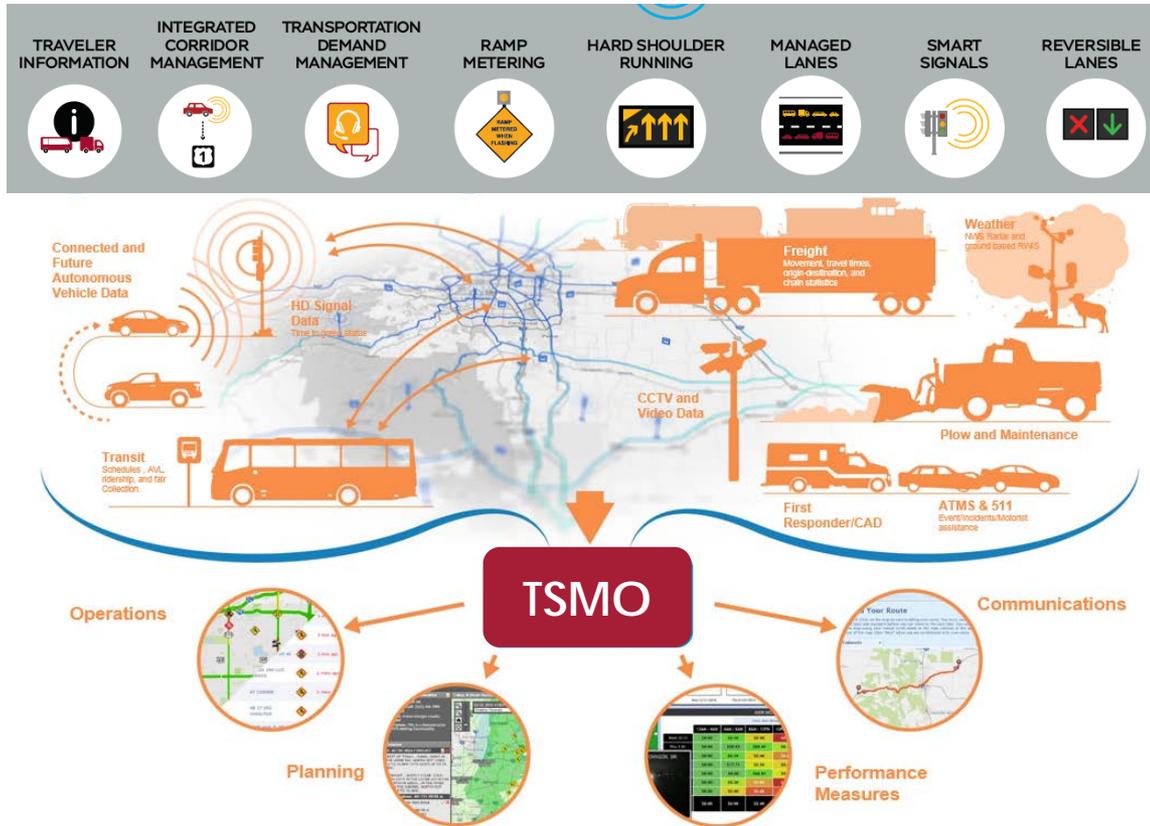


EXPECTED TSMO OUTCOMES

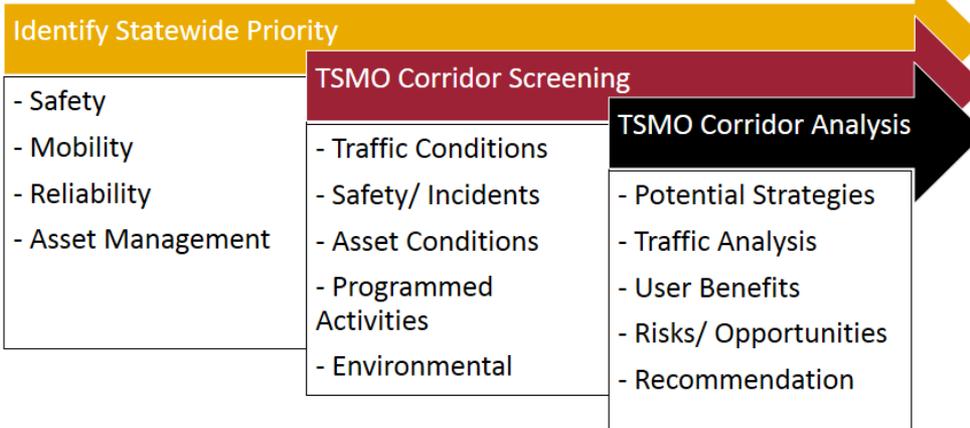
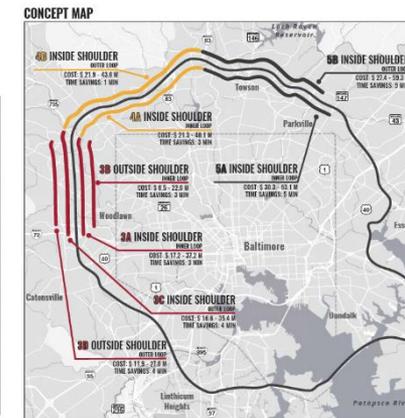
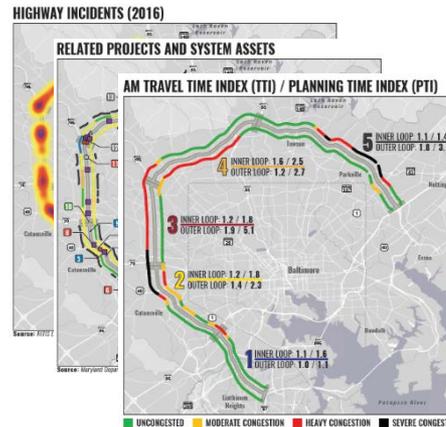
Building a System of Systems



Rethinking Our Transportation Solutions and Services



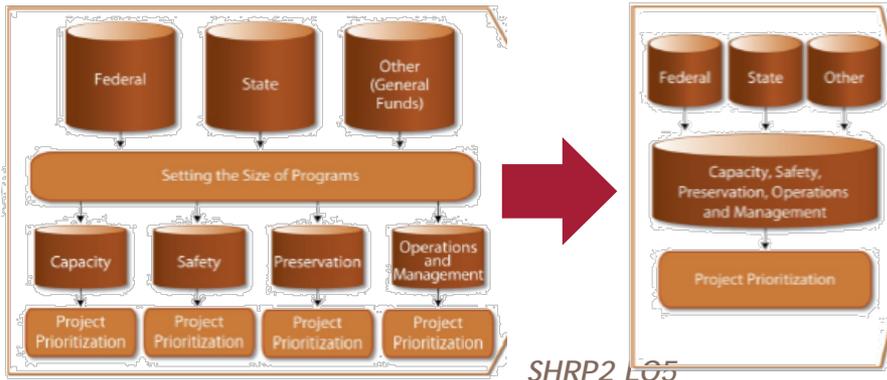
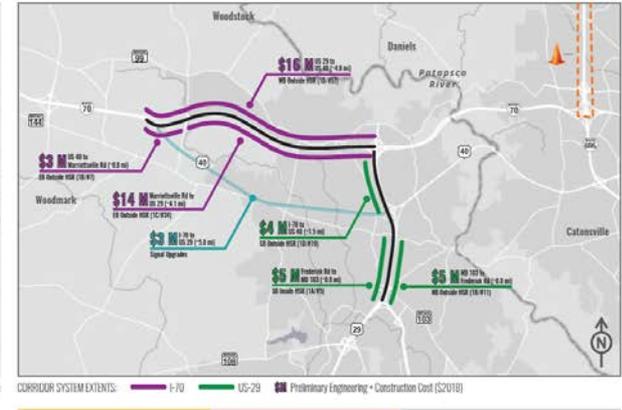
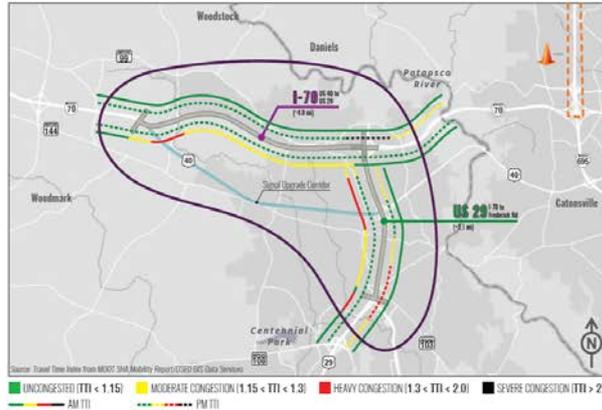
Formalizing a TSMO Master Plan



TSMO Projects and Programming

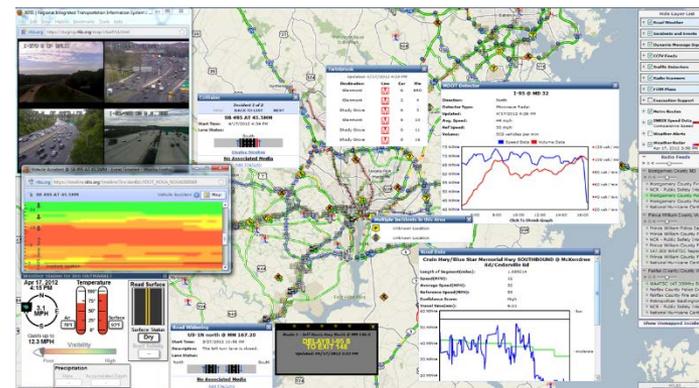
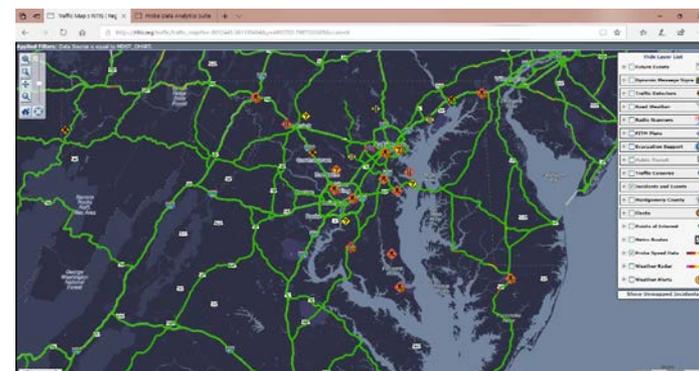
Rethinking:

- Projects as Systems
- Performance Measures
- Programming Models



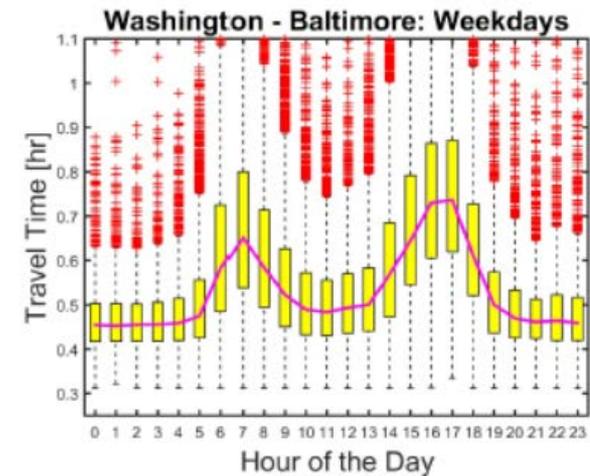
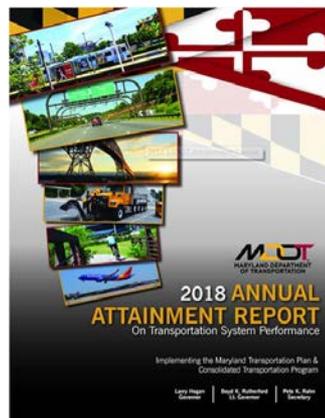
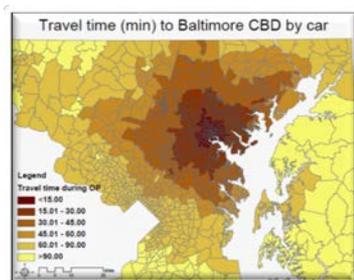
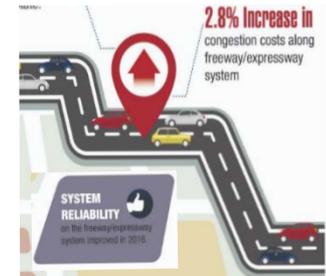
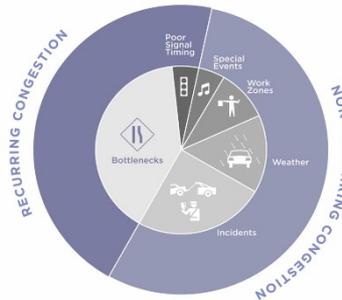
Data Technology to Support TSMO

- Real time applications
- Archived data applications
- Combination of in-house tools and UMD CATT Lab RITIS
- MDOT Common Operating Picture



TSMO Performance Measures

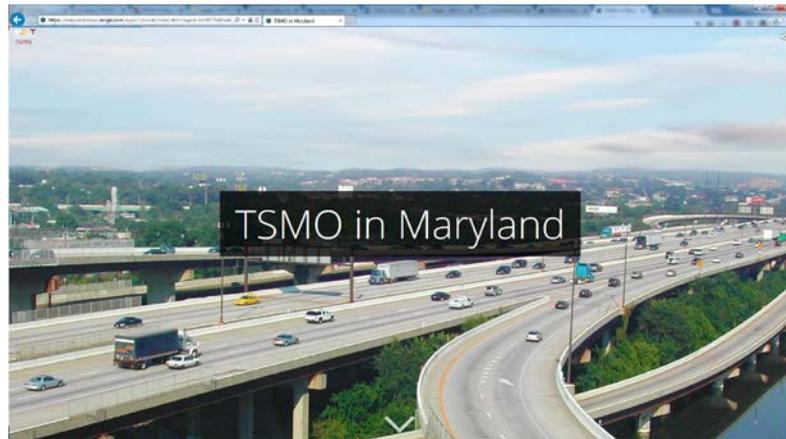
- Congestion & Reliability (Segment Level/Trip Level)
- Accessibility/Connectivity
- Market Segments (businesses, commodity flows)
- Freight Fluidity (supply chains)
- Economic Metrics



TSMO Awareness, Education, Training/Communications & Outreach



- MDOT SHA Internet Website
- MDOT TSMO SharePoint (Internal)
- TSMO University
- GIS Story Maps
- Newsletters, Brochures, TSMO Articles, etc.



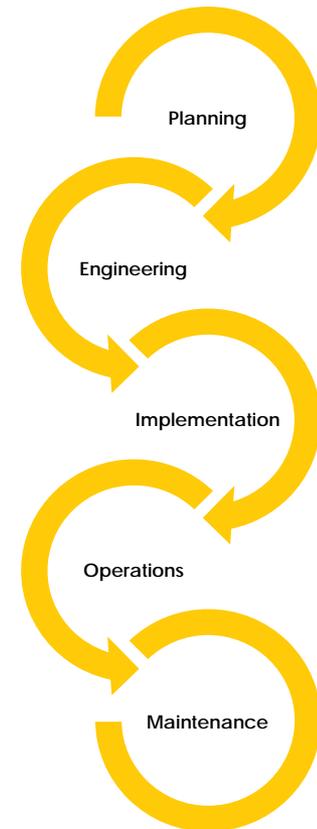
- MDOT SHA TSMO Story Map
- CAV Strategic Action Plan Story Map
- MDOT Freight Story Map
- MDOT SHA Mobility Performance
- MDOT SHA Winter Operations



WHAT DOES TSMO MEAN FOR THE INDUSTRY?

Thinking Differently

- What does the “System of Systems” look like? - establish a Statewide Vision of the Services we want to offer to our Customers
- Mainstreaming TSMO Projects and associated procurement & delivery
 - Projects with civil heavy scope (TSMO Strategies, ITS Infrastructure as part of scope)
 - Operational projects (ITS/ Software heavy)



Thinking Differently

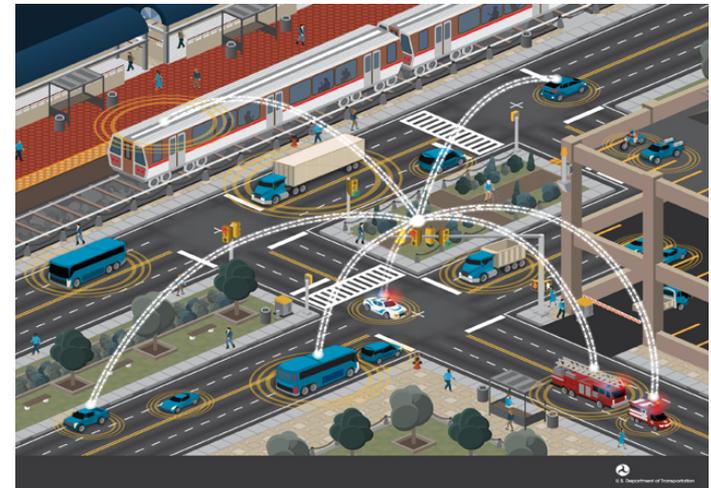
Rethinking Communications & Operational Technology Projects

Infrastructure for TSMO and ATM/ ICM/ CAV Needs

- ITS Field Device Infrastructure
- Operating System Software
- Communications Network

Delivery/ Procurement Strategies

- Area wide/ Corridor specific operational contracts
- Performance based service contracts
- P3/ Resource-sharing Opportunities



Thinking Differently



- TSMO provides a new perspective - using existing approaches combined with technology to meet the challenges of building a **Systems of Systems**
- TSMO addresses all four of MDOT SHA's Priorities, with a focus on Customer Experience
- Renewed partnerships and collaboration with industries and stakeholders for transportation of tomorrow.
- **ARE YOU READY FOR THIS JOURNEY WITH US?**

Thank You!

CONTACT INFORMATION

JOSEPH SAGAL

Director, Office of CHART and ITS Development

(410) 582-5605

jsagal@sha.state.md.us

SUBRAT MAHAPATRA

Deputy Director/TSMO Program Manager,

Office of CHART and ITS Development

(410) 582-5613

smahapatra@sha.state.md.us