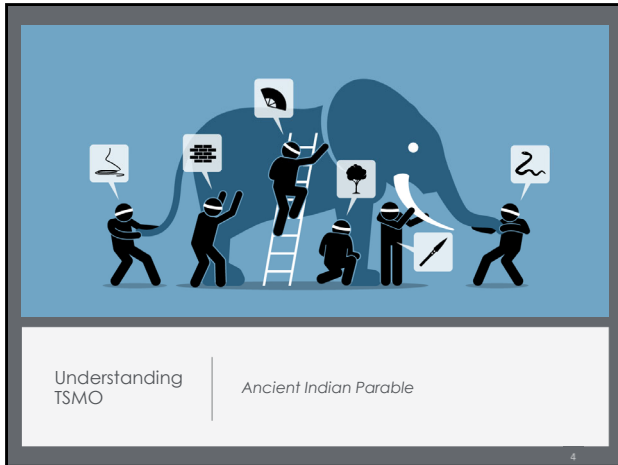


What is TSMO?

Transportation Systems Management & Operations

Integrated strategies to **optimize the performance of existing infrastructure** through implementation of multimodal and intermodal, cross-jurisdictional systems, services, and projects designed to **preserve capacity** and improve security, **safety**, and **reliability** of the transportation system.









TSMO Plan History

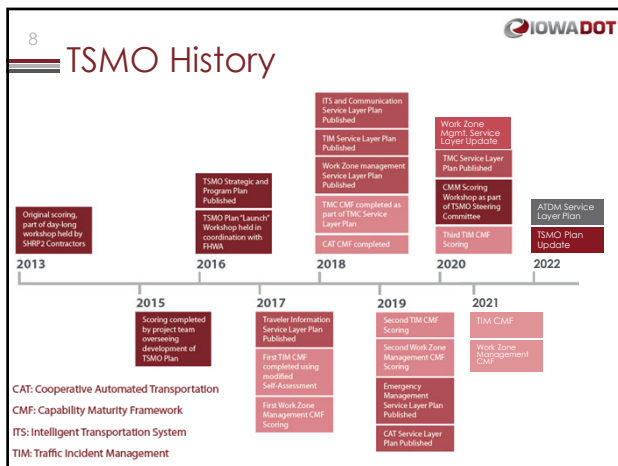
- Original Plan Completed in 2016
- One of the first in the Country
- The "Iowa Model", followed by many other states

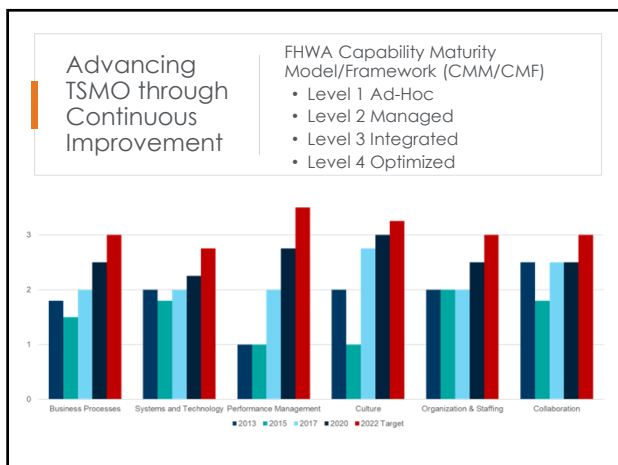


TRANSPORTATION SYSTEMS MANAGEMENT AND OPERATIONS (TSMO) STRATEGIC PLAN
February 2016
IOWA DOT

2016 TSMO PLAN

Strategic Plan	Program Plan	Service Layer Plans
Audience: All levels of DOT	Audience: Agency leadership	Audience: Staff involved with TSMO
Strategic	Programmatic	Tactical





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Eight TSMO Service Layer Plans

2017

- Traveler Information

2018

- ITS and Communications
- Traffic Incident Management
- Work Zone Management (2020 update)

2019

- Emergency Management
- Cooperative Automated Transportation
(was Connected and Autonomous Vehicle)

2020

- Traffic Management Center

2022-'23: Active Transportation and Demand Management

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Work Zones & Traffic Critical Projects

- Comprehensive look at Work Zones
- Write up at NOCoE (under Work Zone)

<https://transportationops.org/tsmoaward/2021>

- More resources at

<https://iowadot.gov/workzonereferencelibrary>



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Work Zones & Traffic Critical Projects

<https://transportationops.org/tsmoaward/2021>

<https://iowadot.gov/workzonereferencelibrary>

- Work Zone Council
- Traffic Critical Project Checklist
- Lane Closure Planning Tool
- TIM Plan Temporary modifications
- Statewide Intelligent Work Zone program
- Extra Enforcement
- Lane Closure Restriction Maps
- Smart Arrow Boards
- (Automated) Audible Attenuators
- Documenting Unique Circumstances
- Construction to Design feedback loop

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Iowa DOT TSMO on web

<https://iowadot.gov/tsmo/>

TRANSPORTATION SYSTEMS MANAGEMENT AND OPERATIONS (TSMO)

ABOUT TSMO

Transportation Systems Management and Operations (TSMO) is a strategic approach to improving the state's transportation system to help you reach your destination, safely, efficiently, and conveniently.

WHAT IS TSMO?

The strategic approach to improving the state's transportation system to help you reach your destination, safely, efficiently, and conveniently.

WHY DEVELOP A TSMO PLAN?

Our roads are busier than ever before and with more drivers on the road, the potential for crashes and increased congestion is greater than ever.

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Organizing for TSMO

Lead	Support	Others
Operations Division <ul style="list-style-type: none"> Traffic Operations Traffic & Safety Maintenance Construction & Materials Motor Vehicle Enforcement 	<ul style="list-style-type: none"> System Planning Strategic Communications Location and Environment Design Modal Transportation Project Management Research and Analytics 	<ul style="list-style-type: none"> Universities DPS-State Patrol HSEMD Iowa Communications Network (ICN) Cities and MPOs
Field Operations Division (Districts) <ul style="list-style-type: none"> District TSMO Engineers Maintenance & Construction 		

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District Traffic Operations Engineers

Benjamin Hucker

Cedar Rapids

Newman Abuissa

Austin Yates

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District TSMO User Group

- Where "M&O" happens
- Monthly Informal meetings *since May 2021*
 - 3 District TSMO Engineers
 - 6 Traffic Techs
 - + 2-4 Others per District
- More Immediate Incident Monitoring and Awareness

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Organizing for TSMO

Internal TSMO-Oriented Groups

- TSMO Steering Committee
- Work Zone Council
 - WZ Management & Traffic Operations Subcommittee
- District TSMO Users Group

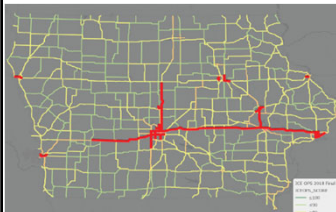
External TSMO-Oriented Groups

- Statewide TIM Committee
- Multi-Disciplinary Safety Teams
- Iowa Advisory Council on Automated Transportation

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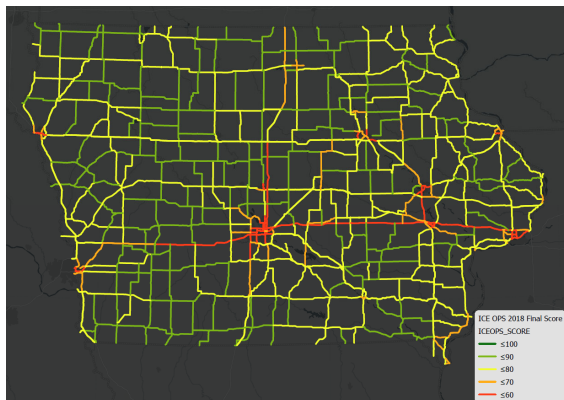
Infrastructure Condition Evaluation-Operations "ICE-Ops"

Segment scoring



Criteria	Weight
AADT	20%
Annual Bottleneck Duration	15%
Incident Density	15%
Crash Rate	15%
Buffer Time Index	10%
Event Center Proximity	5%
Flood Event Density	5%
Winter Weather Sensitive Mileage	5%
Freight Network Mileage	5%
ICE Infrastructure Score	5%
	100%

ICE-Ops Composite Scores

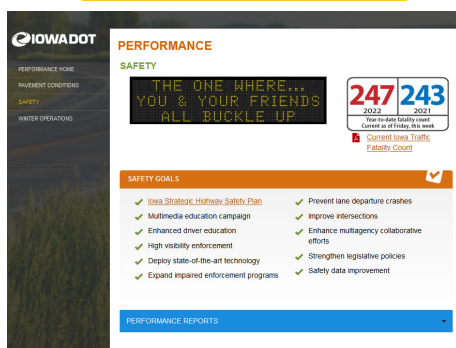


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DOT "Performance" Dashboard

<https://iowadot.gov/performance/safety>



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Des Moines Integrated Corridor Management

Collaboration: Consultant, MPO, Cities, District 1, Location & Environment, Traffic Operations, FHWA

Comprehensive and Holistic approach (Working Groups)

- Travel Demand
- Emergency Response
- Freeway Operations
 - Ramp Metering
 - Dynamic Shoulder Use
 - Queue Warning
- Arterial Operations



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IOWADOT

2022 TSMO Plan Update

IOWADOT

IOWA DOT TSMO PLAN UPDATE

- 51 pages (also 2-page & 7-page summaries)
- Tied to 5-Year Priority Goals from Business Plan
- 31 Recommendations

What Are We Doing?

Transportation Systems Management & Operations

...now

TSMO Annual Accomplishment Plan

Priorities determined annually by TSMO Steering Committee

- 7 Priority, Cross-Bureau/ Cross-Division Tasks

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Agency Objectives for 2022

DOT leadership set six, 1-Year Objectives:

- 1. Deploy Proactive Traffic Management**
- 2. Improve Work Zone Safety**
3. Improve the Project Delivery Cycle
4. All Employees Trained in Customer Service Principles
5. Remodel the External DOT Website
6. Create a more Diverse/Equitable/Inclusive Culture

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2022 TSMO Annual Accomplishment Plan Tasks – “**Priority**” list


- TSMO Service Layer Plan Updates
 - Active Transportation & Demand Management (ATDM)
- Work Zone Data Clearinghouse
- Lane Closure System
- Continue Integration of TCP and IWZ into Project Development
- Research to Assess Standard TCP Delays
- TSMO Training & Outreach
- Incorporate TSMO into Project Delivery

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Active Transportation and Demand Management (Service Layer)

- Integrated Corridor Management Principles
- Actively managing traffic
 - Part-time Shoulder Use
 - Ramp Metering
 - Variable (Advisory) Speed Limits
 - Travel Times
 - Lane Utilization
 - Active Traffic Signal Optimization

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Lane Closure System

Objectives

All types of lane closures

Keep lanes open as much as possible and make them safe when they must be closed.

Emphasize **ease of use** by...

Automating connectivity among existing systems (*Masterworks, Lane Closure Planning Tool, Smart Arrow Boards, etc.*)

Create a **simple interface** that works on multiple platforms
"60 seconds"

Improve Work Zone Safety: Lane Closure System



Biggest TSMO Challenge

TSMO in Project Development/Delivery

- Alternatives Analysis
- Project Prioritization
- Optimizing Construction Impacts
- Funding

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What's in the Future?

Transportation Systems Management & Operations
...to come!

31 **Aligning with DOT Business Plan**

Goal 1.
Improve Transportation System Safety & Performance
Outcomes include: zero fatalities in work zones, total traffic fatalities significantly reduced, increased efficiency, reliability, and condition of our transportation system

Goal 2.
Improve Customer Service
Outcomes include: greater levels of customer satisfaction across all programs and services

Goal 3.
Advance Workforce for Future Challenges & Opportunities
Outcomes include: engaged and empowered employees, increased diversity, equity, and inclusion, and steady reductions in turnover rate (non-retirement)

Goal 4.
Secure Stable & Sustainable Funding
Outcomes include: implemented funding strategies, ensured diversified funding mechanisms, and reduced technical debt

Goal 5.
Grow Innovation
Outcomes include: adopted smart technologies, culture of innovation, and modernized systems



IOWADOT
MAKING LIVES
BETTER THROUGH
TRANSPORTATION
2021-2025
IOWA DOT
BUSINESS PLAN

32 **Business Plan Goals & Correlated TSMO objectives**

Goal	Objective
1. Improve Transportation System Safety and Performance	<ul style="list-style-type: none"> Reduce the number of fatal and severe crashes Reduce the number of secondary crashes caused by traffic incidents Reduce the number of work zone (and maintenance) related traffic incidents Improve travel time reliability Increase the resilience of the transportation system to floods, winter weather, and other extreme weather events Improve level of service on major freight corridors Maximize use of existing roadway capacity Respond to and clear traffic incidents as quickly as possible Minimize the environmental impacts of the transportation system Integrate TSMO into existing Iowa DOT policies, plans and procedures
2. Improve Customer Service	<ul style="list-style-type: none"> Provide timely, accurate and comprehensive information to customers Allow no unplanned road closures or restrictions due to conditions within Iowa DOT's control Accommodate bike, pedestrian, transit, and commercial vehicles in transportation management and operations Build coalitions that improve TSMO (e.g., Statewide TSM, Automated Transportation Council, etc.) Proactively coordinate responses to large scale traffic incidents with adjacent states
3. Advance Workforce for Future Challenges and Opportunities	<ul style="list-style-type: none"> Provide staff knowledge and management resources to enable adaptation to rapidly changing technology Define TSMO workforce (position types) of the future Develop strategies to attract and retain new types of positions to support TSMO
4. Secure Stable and Sustainable Funding	<ul style="list-style-type: none"> Develop cost sharing models for integrated corridor management Consistently pursue grant opportunities
5. Grow Innovation	<ul style="list-style-type: none"> Provide high quality, high fidelity data in standards-based formats for partner collaboration Use proven and emerging technologies to improve performance management and decision support systems Implement integrated corridor management strategies to manage traffic across multiple jurisdictions and modes Develop highway automation infrastructure in coordination with industry trends Leverage university partnerships to innovate Engage Iowa's entrepreneur network to improve TSMO

TSMO Plan Update
31 Recommendations




IOWA DOT
TSMO PLAN UPDATE


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Recommended Projects, Services, and Activities

31 to consider over 5 years

Examples:

- Develop Ops-Oriented Resiliency Index
- Integrate TSMO into DOT Policies & Guidance
- Enhance joint agency traffic operations performance agreements
- Integrate TSMO into MPO and RPA plans
- Expand statewide video sharing



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Action Plan "One-Pagers"

Business Processes BP1: Integrate TSMO into DOT Policies and Guidance

Associated Goals	Safety & Perf	Cost Service	Workforce	Funding	Innovation
Benefits, Impacts, Outcomes <ul style="list-style-type: none"> • Help ensure gaps and overrights about operations are filled in guidance. • Broaden consideration of TSMO throughout all programs and locations for additional safety and performance benefits. 					
Lead Objectives <ul style="list-style-type: none"> Design Location & Environment Maintenance 					
Supporting Objectives <ul style="list-style-type: none"> Traffic Operations Construction & Materials Bridges & Structures Contracts & Specifications Program Mgmt Districts 					
Implementation <ul style="list-style-type: none"> FY24+ 					
Resources Needed <ul style="list-style-type: none"> Staff time 					
Dependencies <ul style="list-style-type: none"> Document update cycles 					
How do we know if we are done? <ul style="list-style-type: none"> • Policy and guidance documents including associated tools have been updated to better integrate TSMO. • TSMO has become a more common consideration in new functional areas. • TSMO projects are considered objectively along with traditional infrastructure projects. 					

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- Hiwgvtixsr
- GvagepWdtw
- Ls{ \$s\$ i\$
- ors{ \$s\$ i\$vi\$
- hsric

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TSMO Workforce Development



- Recruitment and Retention of Evolving skill set needs
 - Data analysts, technology, GIS, operations
- Overlap with Diversity, Equity & Inclusion
- 2021 & 2022 Discussions with
 - FHWA, Volpe, National Operations Center of Excellence (NOCOe), State DOTs, Consultants
 - More meetings planned
- Priority in Iowa DOT Business Plan



Thank you



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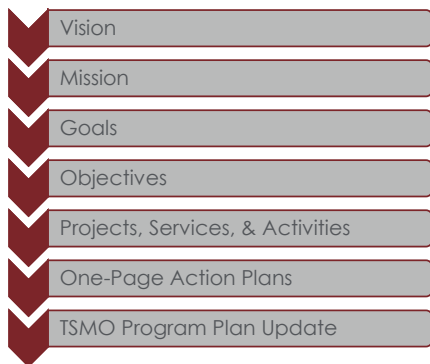


ICE-Ops Screening Tool

- Infrastructure Condition Evaluation—Operations = **ICE-Ops**
- 10 weighted criteria on 100-point scale:
 - AADT
 - Bottlenecks
 - Incidents
 - Crashes
 - Buffer Time Index
 - Event Center Proximity
 - Flood Events
 - Winter Weather
 - Freight Impacts
 - Infrastructure Condition

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TSMO Plan Hierarchy



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TSMO Steering Committee

6 meetings / year

45+ invitees

- New Chair, Jon Ranney
- Scott Marler, Troy Jerman, Mitch Dillavou, Charlie Purcell, Melissa Gillett, Stu Anderson
- Sys. Ops., TDD, and MVD Bureau Directors + staff
- 6 District Engineers, 3 District TSMO Engineers
- InTrans, FHWA, Gannett Fleming

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Major Accomplishments

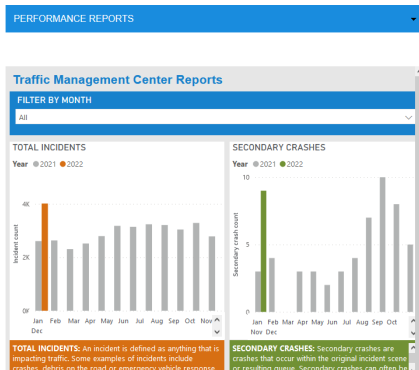
- 24 Projects, Services or Activities completed with 15 more underway
- 7 of 8 Service Layer Plans completed
- Multiple TMSO-focused positions
- Elevation of Operations Division
- Internal and External TMSO-Oriented Groups

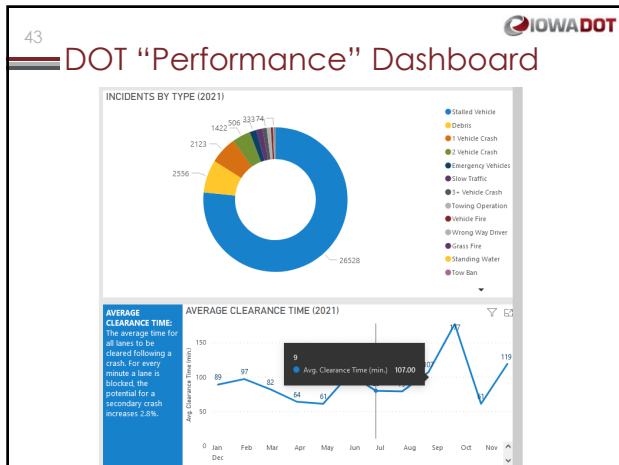


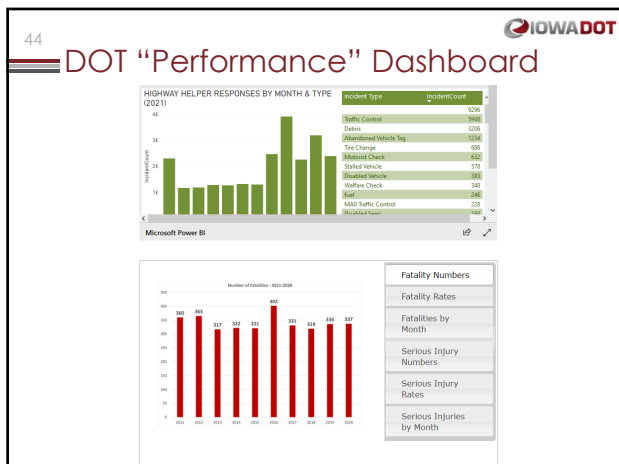
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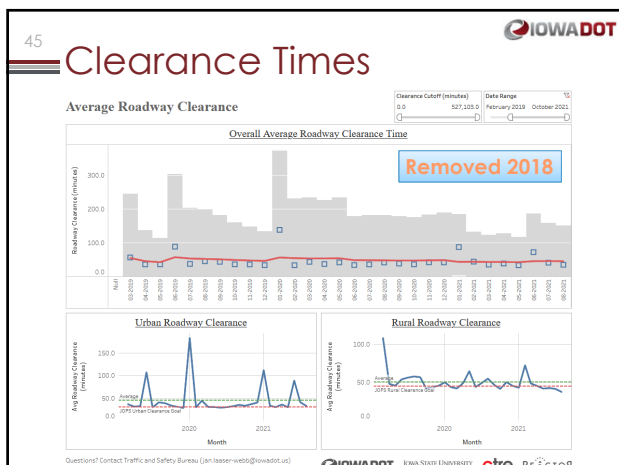


DOT "Performance" Dashboard









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TSMO Annual Accomplishment Plans

- 15-25 Priority TSMO Tasks that can be completed in the year
 - Software, Processes, Programs, Pilots, etc.
- Established by TSMO Steering Committee
- Funding from various sources



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2022 TSMO Annual Accomplishment Plan Tasks – **Needing Refinement**

- TSMO Program Plan Implementation
 - Develop from TSMO Plan Update
- Implement Emergency Management Situational Awareness Tool
 - Relates to Homeland Security
- Develop TSMO Processes & Specifications for Design Manual
 - What should this involve?: Identifying needs, Project prioritization, Alternatives analysis, Funding mechanisms?
- Urban Growth Transition Corridors
 - First define Access Management opportunities and what has been done previously

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Recommended Projects, Services and Activities

- Based on:
 - Keep, Kill, Combine Exercise
 - (items remaining from 2016)
 - Gap Analysis – How do we reach targets?
 - CMM National Guidance
 - Mural Ideation Exercise
 - TAC Guidance
 - Municipal focus groups
