Agenda

➤ Planning Process Recap
  ▪ Stakeholder Engagement
  ▪ Supporting Materials
    ✦ Technology Inventory
    ✦ ITS Architecture
    ✦ Data Governance Best Practices Report
    ✦ Pilot Project Evaluation Methodology
    ✦ Local Government Deployment Guide

➤ Regional Strategic Plan
  ▪ Strengths and Opportunities
  ▪ Initiatives and Actions
Stakeholder Engagement

**Developing a Common Vision**
- Establish a TSMO vision for the region
- Develop operations goals and objectives

**Defining the Building Blocks**
- Develop a baseline inventory of ITS and ATMS infrastructure
- Explore best practices in transportation data governance and data exchange
- Update the regional ITS Architecture
- Conduct technological assessment

**Leading to Effective Deployment**
- Identify pilot concepts
- Develop ITS/TSMO Local Agency Deployment Guide
- Develop 5-year and 10-year Action Plans

**Workshop #1: Visioning**
- December 2018

**Workshop #2: ITS Architecture & Data Governance**
- March 2019

**Workshop #3: Technology - Pilot Projects & Local Agency Guide**
- July 2019

**Workshop #4: Regional Strategic Plan**
- December 2019
Transportation systems across the Atlanta region are managed and operated to optimize safe, reliable, and efficient travel for all system users – people and freight – contributing to sustainable economic growth and a high quality of life.

**TSMO Vision and Goals**

**Goals / Key Outcomes**

- Optimizing Safety
- Reliable Travel Times
- Efficient, Seamless Travel
- Equitable Access
- Environmental Benefits

**Foundational Elements**

- Collaboration
- Philosophy focused on moving people and goods
- Data sharing
- Culture of innovation
Data Resources

Regional Inventory

Data Governance

Data Governance Best Practices and Recommendations Report
Transportation System Management and Operations (TSMO) Vision and Regional Intelligent Transportation Systems (ITS) Architecture Update
Final — May 24, 2019

Prepared by [logo]
ITS Architecture Update

- Stakeholders - 55
- Elements - 210
- Service Package Diagrams - 248
- Interfaces - 531
- Projects - 97

http://itsarchitecture.atlantaregional.org/
Pilot Project Screening Assessment

- Location
- Champion
- Project Type
  - 20- Connected Vehicle
  - 10- Traveler Information App
  - 9- Data Management
  - 6- Smart City
  - 4- Autonomous Vehicle
Local Agency Deployment Guide – TSMO Strategies

- Traffic Signal Management
- Work Zone Management
- Connected and Automated Vehicles
- Traffic Incident Management
- Emergency Transportation Operations
- Traveler Information
- Transportation Demand Management
- Integrated Corridor Management
- Event Management
- Freight Management
- Performance Management
- Supporting Deployments

TRAFFIC SIGNAL MANAGEMENT

Effective traffic signal management is proven to be one of the most cost-effective operational improvements; signal retiming typically provides a benefit to cost ratio ranging from 17:1 to 62:1. Traffic signals, the most common form of traffic control, are crucial to a transportation network and can enhance corridor operations. Efficiently managing traffic signals results in reduced congestion, reduced maintenance expenditures, and increased safety. FHWA defines traffic signal management as "organizing for the planning, maintenance, design, and operation of signalized intersections and traffic signal systems." Traffic signal timing programs can be basic and localized, such as a single intersection, or more sophisticated, such as having various, advanced signal timing programs. Such systems require regular maintenance and frequent monitoring to maintain the efficiency of the signal system.

Support for Regional TSMO Goals

Optimizing Safety
Safety is enhanced with the use of traffic signal management by enhancing progression through intersections, which reduces stop and go traffic to reduce the number of crashes. In addition, emergency vehicle preemption reduces the risk of crashes by allowing the emergency vehicle to progress through the intersection with the appropriate signal indication.

Reliable Travel Times
More reliable travel times are realized through traffic signal management by enhancing the operational efficiency of corridors—getting more cars through a given corridor more effectively.

Efficient, Seamless Travel
Traffic signal management supports efficient, seamless travel by synchronizing the movement of vehicles along the corridor, ideally to prevent things such as "hitting every red light." By maintaining the signal system as well as adjusting the system as needed through frequent monitoring, traffic system management can also support efficient movement travel by reducing the number of down devices or mistimed intersections due to out-of-date cycles.

Environmental Benefits
Reducing the congestion of high-volume routes results in fewer vehicles idling and producing emissions. Reducing the amount of starts and stops that a motorist experiences will also reduce the amount of emissions produced by each vehicle.

Applications
Applications used to manage traffic signals vary widely in complexity and technology from basic signal timings to coordinated systems that rely on real-time detection data and advanced software systems. With the use of coordination and communication between signals, traffic devices can adjust based on current traffic conditions—travel patterns along major corridors change significantly throughout the day due to commuter, school, shopping, special events, and other activities that generate traffic. Having signals and other supportive devices communicate with each other to respond to current conditions provide significant safety and mobility benefits and allows for a flexible system that responds to ever-changing corridor needs.

References

Regional Examples

Regional Applications

Regional Contexts

Regional Goals

Description

Coordinated Signal Timings

Uncordinated signal timings serve movements at single intersections based on current demand by using minimum and maximum times and detection data. This signal timing works well with low volumes or large signal spacing. However, the lack of coordination can lead to increased stops, congestion, and driver frustration. If a driver is required to stop at every traffic signal along a route, Georgia Department of Transportation (GDOT) currently uses the MacNewmanMaxTime traffic signal software throughout the state. It is the responsibility of the maintaining agency to deploy, operate, and maintain the advanced signal timing, but the software is made available to all agencies within the state free of charge.

Responsive Signal Timings

Responsive signal timings evaluate real-time data collected from detectors and adjust coordinated signal timings per cycle using parameters defined by predetermined timing plans. This signal timing is used when traffic patterns along a signalized corridor are variable and unpredictable, often times during special events, construction, or incidents.

Adaptive Signal Timings

Adaptive signal timings evaluate real-time data collected from detectors and adjust coordinated signal timings per cycle determined by automated calculations of optimal signal timings. The use of automated algorithms vs. predetermined timing plans is the key difference between responsive and adaptive signal timing. This signal timing is used when traffic patterns along a signalized corridor are variable and unpredictable, often during special events, construction, or incidents.

Emergency Vehicle Preemption (EVP)

Emergency vehicle preemption involves communication between an emergency vehicle and traffic signals. The emergency vehicle transmits a signal that is received by the traffic signal controller which then provides a green signal in the direction of travel so that the emergency vehicle can safely and quickly travel through the intersection. This application can be accomplished through a variety of methods:

- Station activation: when an emergency vehicle leaves a given station, the station is activated. The system sends a command to the traffic signals along a predetermined route that then cycle to provide green in the direction of emergency vehicle travel for a given amount of time.
- Dynamic activation: the emergency vehicles are equipped with an on-board unit or piece of hardware which sends a signal to a receiver at a traffic signal. The message is received and the signal cycles to provide green in the direction of emergency vehicle travel for a given amount of time.

Contexts

Applications

References
Regional TSMO Strategic Plan
Creating a Regional TSMO Strategic Plan

Creating a plan to proactively advance the region’s vision for ITS/TSMO

Win the Future

Strategic Vision
- Goals and objectives
- Institutional drivers
- Guiding principles

Current Assessment 2020
- Compare to best practices and vision
- Assess gaps

5-Yr Action Plan 2025

10-Yr Action Plan 2030
Developing Strategic Plan

➤ Developed Regional Vision
  ▪ Used survey, initial workshop, and follow up feedback

➤ Conducted Technological Assessment
  ▪ Assessed gap between current state and vision
  ▪ Compared current state against national best practices

➤ Identified Strategic Initiatives (Focus Areas)

➤ Proposed Priority Actions

➤ Developing Action Plans
  ▪ Including description of benefits, lead and supporting agencies responsible, steps, and timeframes

Gathering input via stakeholder survey

86 RESPONSES!
TSMO Strategic Plan Organization

- Introduction
- TSMO Vision and Goals for the Atlanta Region
- Assessment of Regional Strengths and Opportunities
- TSMO Strategic Plan Framework and Regional Initiatives
- TSMO Priority Actions
- Next Steps / Implementing this Plan
Assessment of Regional Strengths & Opportunities: TSMO Goals

**Strengths**
- Strong programs focused on incident management
- Real time monitoring of traffic on state roads
- Traffic signal detection on all major arterials
- Expanding network of priced managed lanes
- Robust regional TDM program

**Opportunities**
- Technology deployment focused on pedestrian and bicyclist safety
- CV Technologies to enhance incident response and safety
- Transit Signal Priority (TSP)
- Work zone & road weather management
- Integrated multi-modal electronic payment and reservations system
- Multimodal trip planning tools
Assessment of Regional Strengths & Opportunities: Foundational Elements

Strengths

▪ Strong collaboration within the region via RTOP
▪ Strong venue for transit coordination through ATL
▪ The 2040 Regional Transportation Plan places an important focus on TSMO, including TDM

Opportunities

▪ No dedicated on-going ARC TSMO working group or committee
▪ Inconsistent understanding of TSMO across the region and among many partners
▪ No centralized data hub to distribute modal information
Strategic Initiatives & Priority Actions
Strategic Initiatives

Foundational Elements
Focused Initiatives

- Strengthen TSMO Planning & Institutions
- Enhance Data Sharing & Management
- Encourage TSMO Innovation

Deployment Focused Initiatives

- Deploy Connected & Automated Vehicle Technologies
- Advance Regional Coordination & Network Communications
- Strengthen Work Zone & Event Management
- Enhance Transit Operations
- Advance Mobility as a Service
Format for Presenting Actions in the Plan

➤ Description and Benefits to the Atlanta Region
➤ Support for:
  ▪ Goals
  ▪ Foundational Elements
➤ Stakeholders
➤ Action Checklist

Description and Benefit to the Atlanta Region:
The Atlanta region has a wide array of organizations that are responsible for TSMO, yet the region does not currently have an established ongoing working group or committee focused on TSMO coordination and collaboration. Several other metropolitan planning organizations (MPOs) around the country have TSMO-focused committees that bring together diverse regional stakeholders to ensure coordination of activities, to advance information sharing, and advance deployment of ITS solutions. A regional TSMO steering/implementation committee with representatives from public agencies, as well as the private and academic sectors, will serve as a forum for advancing the region’s TSMO vision by guiding the implementation of key initiatives, supporting funding decisions, enhancing collaboration and information sharing, and tracking progress. This committee can coordinate with existing organizations such as ITS Georgia and events such as ConnectATL to support information sharing on TSMO and technology innovations.

Stakeholders: ARC (Lead), GDOT, transit agencies, local agency stakeholders, academic institutions, and private service providers.

**ACTION 1.1 CHECKLIST**

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<thead>
<tr>
<th>TERM ID</th>
<th>ACTION</th>
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<tr>
<td>N1</td>
<td>Reach out to potential members of the Steering Committee and seek their participation</td>
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<tr>
<td>N2</td>
<td>Establish rules of practice and operating procedures for the committee; this may become a collaboration effort with existing Committees rather than a traditional standing committee</td>
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<tr>
<td>N3</td>
<td>Identify champions for each Initiative that will guide the implementation of the recommended actions</td>
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<td>M1</td>
<td>Hold meeting to assess impact of the committee and replace/add members if needed</td>
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<tr>
<td>L1</td>
<td>Continue to evolve the committee to meet current TSMO needs</td>
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1. Establish and sustain a diverse regional TSMO committee.

2. Demonstrate the value and need for TSMO by making TSMO initiatives and projects more visible to the public and decision makers.

3. Develop tools and guidance for local agencies and partners to advance TSMO strategies.

4. Integrate TSMO into local and regional planning and development processes.

5. Incorporate freight into TSMO planning activities.


7. Incorporate more TSMO performance measures into ARC’s project selection processes.
1. Establish a long-term regional data governance framework.
2. Develop a centralized data hub for curated multimodal safety and operations data.
3. Improve/develop data curation and sharing strategies.
4. Develop data-driven methodologies to assess the equity and environmental conditions and impacts of strategies.
5. Develop or leverage existing crowd sourced applications.
1. Share information and develop structures to advance innovative procurement strategies.

2. Support more efficient design, operations, and maintenance through a focus on analytics/data and automation.

3. Fund innovative TSMO/technology pilot projects.

4. Develop an innovative TSMO solution focused on a particular problem or community issue of regional significance.
1. Study and share the potential impacts of connected and automated vehicles.

2. Leverage connected vehicle technologies to improve safety and mobility for all travelers, especially vulnerable road users (e.g., pedestrians and bicyclists).

3. Leverage connected vehicle technologies to enhance safety through improved incident response.
1. Advance Integrated Corridor Management (ICM) systems.
2. Develop better tools for communications among emergency responders and between event management tools and traveler information outlets.
3. Modernize the communications network architecture.
Strengthen Work Zone and Event Management

1. Improve coordination of work zone and special event activities.
2. Implement smart work zone strategies.
3. Enhance communications and implement targeted demand management strategies (e.g., incentives) for special event management.
1. Advance implementation of transit signal priority (TSP) strategies.
2. Develop regional, interoperable transit operations and fare payment systems.
3. Support local transit agencies in deploying technologies to support better planning, services and communications with customers.
Advance Mobility as a Service

1. Promote and increase access to safe, affordable and environmentally friendly mobility options.
2. Develop a mobility platform that includes an integrated, multimodal trip planning and electronic payment and booking system.
3. Identify opportunities to further incentivize sustainable travel options.
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