



## ATLANTA REGIONAL TRANSPORTATION SYSTEM MANAGEMENT AND OPERATIONS (TSMO) TECHNOLOGY WORKSHOP (WORKSHOP #3) SUMMARY

### BACKGROUND AND PURPOSE

The TSMO Workshop #3, focusing on Transportation Technology, was held on July 15, 2019 from 9:00 a.m. to 12:00 p.m. at the Atlanta Regional Commission (ARC) Harry West Conference Center (229 Peachtree St NE). The workshop brought together a wide array of stakeholders from ARC, Georgia Department of Transportation (GDOT), MARTA, the State Road and Tollway Authority (SRTA), local government, Georgia Tech, and the private sector.

The meeting had two primary purposes: 1) Review and provide input on pilot project concepts and a prioritization methodology to inform future identification and prioritization of TSMO projects for funding; and 2) To review and provide input on an outline and content for of a Local Agency TSMO Deployment Guide. In addition, the workshop included an update on efforts focused on enhancing regional data governance and an update on the development of the regional Intelligent Transportation Systems (ITS) Architecture.

This document summarizes the discussions held during the workshop and key takeaways.

### INTRODUCTIONS AND STATUS UPDATE

Maria Roell of ARC welcomed participants to the workshop, and provided context on ARC's goals for the workshop as part of a broader effort to advance regional TSMO. Participants then introduced themselves. Natalie Smusz-Mengelkoch (Kimley-Horn) and Michael Grant (ICF) then provided a project status update, which included a discussion of the regional TSMO vision and goals and work to date focused on regional data governance.

Michael Grant noted that there was a lot of input that was used to develop a Regional TSMO Vision, including:

- A review of the regional “Win the Future” Vision and supporting plans (e.g., travel demand management plan, freight plan);
- A TSMO stakeholder survey, which asked participants about regional strengths and weaknesses in TSMO and their vision; and
- Results of a TSMO Visioning Workshop

The broad vision statement that emerged from this effort is: “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.

Four key goals or outcomes were identified for the regional TSMO Vision:

- Optimizing safety
- Reliable travel times
- Efficient, seamless travel
- Equitable access

In addition, the vision is supported by the following foundational elements:

- Operations philosophy focuses on moving people and goods, rather than vehicles
- Collaboration across jurisdictional boundaries, public and private sectors, and service providers
- Data sharing across public and private data providers and users
- Fostering a culture of innovation and adaptability to change

Natalie Smusz-Mengelkoch then provided an update of data governance research and planning activities, including a summary of Workshop #2 results, an overview of a “Best Practices for Data Governance” Report, and recommendations for a formal data governance initiation process. She noted that a FHWA-sponsored Mobility Data Business Plan workshop was held on May 14, 2019, and further discussions have been occurring in regard to developing a data governance framework for the region.

## REGIONAL PILOT PROJECT REVIEW

Natalie Smusz-Mengelkoch and Michael Grant provided context for efforts to identify regional TSMO pilot project concepts and to conduct reviews of the project concepts. Natalie explained that professional organizations, such as the Intelligent Transportation Society of Georgia (ITS Georgia) and the Institute of Transportation Engineers (ITE), and stakeholders were asked to provide pilot project ideas for future TSMO and ITS deployments. As a result of this “call for pilot project ideas” from ARC, 56 project ideas were submitted by various sources, including state and county agencies, municipalities, consultants, and vendors.

Next, Natalie Smusz-Mengelkoch noted that the Pilot Project Evaluation Framework includes a screening assessment and prioritization framework. She then described the methodologies used for project screening and prioritization.

The Pilot Project Screening Assessment involved an assessment of location (i.e., whether the project concept identifies a specific location for application) and champion (i.e., whether the project has a champion). The projects were also grouped into eight project types: vehicular mobility, freight, transit, bike/ped/shared, parking, data, app, and smart city.

Then a rubric – with five sections – was discussed to support screening of the project ideas. The sections of the screening assessment rubric are as follows:

- Relative Cost
  - High – requires significant investment of time and/or money
  - Medium – requires moderate investment of time and/or money
  - Low – requires minimal investment of time and/or money
- Goals Addressed
  - Safety – applying technology and context-sensitive approaches to achieve zero fatalities
  - Efficient, seamless travel – coordinated systems across jurisdictions and modes; accessible, real-time travel information

- Equitable Access – people of all ages, abilities, languages, backgrounds, and incomes have access to safe, reliable, efficient mobility options
- Reliable Travel Times – managing planned and unplanned disruptions to reduce unexpected delays
- Complexity
  - Low – build off of existing initiative/infrastructure
  - Medium – new initiative, but concept of operations is vetted and understood
  - High – significant integration, research, development, and/or multi-jurisdictional coordination required
- Regional Impact
  - Low – project expected to impact local jurisdiction only
  - Medium – project expected to impact multiple jurisdictions
  - High – project expected to impact the region significantly
- Conceptuality
  - Build off of existing initiative and/or infrastructure
  - Location defined; goal defined
  - Idea moderately refined, further development required
  - Deployment requested; need for extensive research beforehand
  - Study/research/non-deployment project

Jamie Fischer (SRTA/GRTA/ATL) suggested that the issue of “scalability” be considered as well. For instance, a pilot project might be limited in scope or regional impact but might be scalable to many other communities or locations, so could be a strong pilot idea. A question was raised about whether the screening is designed to get to a scoring approach. It was noted that while an ultimate goal is to support scoring, this was not specifically the purpose of this screening and numerical scoring was not used in this screening process.

Another question was asked in regard to the rubric whether any consideration was given to including emissions reductions or environmental impact as a screening factor. Michael Grant noted that while the vision does not define environmental benefit as a primary goal or outcome of TSMO, the issue of environmental quality has come up in various discussions. Consequently, the team may want to consider creating a separate TSMO goal or outcome focused on environmental benefits, in order to ensure that environmental effects are captured as part of screening or project prioritization.

Natalie Smusz-Mengelkoch then briefly provided highlights of the screening assessment that was conducted for all of the project concepts submitted to date. She also introduced the ARC Transportation Improvement Program (TIP) Project Evaluation Framework. She presented a flow chart showing how the universal TIP call for projects is then put through policy filters (Key Decision Point 1), followed by project evaluation (Key Decision Point 2), and then final factors (Key Decision Point 3) in order to prioritize funding decisions for various Federal funding programs. Maria Roell noted that the final factors account for factors that cannot be easily quantified, such as sponsor priority, regional equity, and deliverability, as well as benefit-cost analysis or cost-effectiveness measures to help compare projects of different sizes. Natalie then showed tables highlighting how different project types are evaluated using different performance criteria, as well as different weights. She noted that an outcome of this effort today would be to help identify criteria or factors to guide TSMO project prioritization in the context of the ARC TIP Project Evaluation Framework.

Kofi Wakhisi of ARC clarified that this discussion could help ARC in updating the TIP categories used for prioritization in the future. He noted that many innovative project ideas do not fit within the current categories of projects. For instance, there is a category for “Roadway TSMO projects” and while there are separate categories of transit projects, and bicycle and pedestrian projects, there is not currently a category that addresses some of the TSMO strategies that support multimodal choices or other innovative ideas, like apps. It was again noted that scalability is a factor that ARC would like to consider in selecting innovative pilot projects.

Kofi noted that ARC is trying to align this task with the upcoming August TIP solicitation and the TIP prioritization process that will be used. Project ideas coming out of this TSMO effort could be resubmitted as projects during the TIP solicitation process. Kyung-Hwa Kim (ARC) noted that ARC has a CMAQ evaluation tool, which is being updated. Kofi noted that there would be about 60 to 90 days for application submittals in response to the call for projects.

## **PILOT PROJECT EVALUATION EXERCISE**

Participants broke out into groups to participate in breakout discussions organized into four topic areas based on general type of TSMO project concepts:

- Vehicular/Freight
- Transit
- App/Other
- Bike/Ped/Shared

The following questions were asked in each breakout group:

- What are some example projects within this category?
- What are some high-level concept considerations? (e.g., who are the preliminary concept developers? Who are partners?)
- How can regional value be enhanced?
- What metrics and methods should be considered for project evaluation?

Each group addressed the questions in slightly different ways, with some focusing more on a few questions than all. Highlights of the discussions are provided below.

### **Group Discussion Results**

#### Group 1 – Vehicular/Freight

The vehicular/freight group primarily centered on projects that would impact freight. There was some limited discussion that smart corridors should be moved to include smart cities overall. Freight conversations included the following:

- Stopped train, blocked tracks
- Curb/parking management
- Height alerts
- Curb/curve warnings
- Restricted routes
- Weight restricted routes

- Information to Waze/Google with profile

A potential project discussed was to develop a warning system for when trains must wait on the tracks in South Fulton, and as a result, block the road for an hour. There was also conversation about developing a system that would warn heavy vehicle users of potential driving restrictions along their route based on their vehicle type. For example, the vehicle type and weight could be entered into Waze, and Waze would guide the driver away from restricted driving conditions, such as low bridges or weight restrictions.

Beyond freight, there was additional conversation about the benefits and challenges of implementing an emergency vehicle preemption system. The following topics were discussed as benefits:

- Safety to reduce rear-end crashes
- Time of day/impact to driver behavior
- Pavements
- Congestion reduction
- Shippers pay-in
- Reduction in response time
- Ambulance 3<sup>rd</sup> party
- Reliable travel times
- Potential phase bank

The following topics were discussed as challenges:

- Multiple players, different priorities
- South Fulton County's memorandum of understanding to respond to 8 cities/split cost

## Group 2 – Transit

The transit group discussed autonomous shuttles, Mobility-as-a-Service (MaaS), transit signal priority (TSP)/Split, Cycle and Offset Optimization Technique (SCOOT) systems, ITS integration/communications, and electrification. This discussion included an overview of how the four ARC TSMO Outcomes related to transit including:

- Reducing transit travel time/making transit travel times comparable or competitive to other mode choices
- Increasing transit frequency in the region and providing increased time-of-day and season-based reliability
- Increasing congestion predictability with dedicated space
- Integrating TNCs such as Uber and Lyft to extend the reach of the system; incorporating algorithms similar to what TNCs use to support reliability of travel times and headways
- Looping in technology-based data to feed operational improvements
- Creating an efficient, seamless system (including trip planning apps and websites) and well-connected network across the various regional providers, and focusing on equity as part of this seamless system
- Considering safety as a type priority when determining modal integration and deployment of amenities, such as security, lighting, and emergency call boxes
- Elevating first-mile/last-mile connectivity and safety

- Deploying technology/programs/pilots at key locations that are repeatable for other locations in the region

The group also discussed key metrics to consider for this mode type when evaluating pilot projects, which include: champion/support (favoring more collaboration) and travel time reduction (perhaps evaluated as ridership x reduction; also considering minimal impacts as a result of side effects of the deployment).

Finally, the group worked through the discussion questions for both a TSP and an ITS integration/communications hypothetical deployment project. These scenarios revealed some common themes for consideration when evaluating transit-specific pilot projects. These themes were:

- Coordination across/partnership with various agencies and transit providers in the region
- Ability to provide comparable trip time to other modes in the region
- Coordination across multiple nodes to complete trips
- Focus on equity
- Compatibility with the ATL Framework

### Group 3 – App/Other

The app/other group discussed the wide variation of concepts within the topic area and how the project type can be challenging to develop because traditional funding mechanisms and deployment strategies are not as effective as compared with more defined scopes and project types. Despite the challenge, example projects were identified, including:

- Seamless travel and connected vehicle applications
- Trip planning applications
- Shared vehicle data
- The Connected Data Platform
- Micromobility applications
- Remote emissions testing (Portland)
- Warning system applications
- Traveler information applications and data

The group heavily discussed various aspects to the Connected Data Platform as an example within this project type that has begun development. Those topics included:

- Extensibility/scalability
- Usability – understanding use cases and practicality
- Need for an agile approach – obsolescence mitigation
- Outcomes based contract (innovative procurement)
- Product management
- Purpose and need should be “80/20”

Metrics discussed for the Connected Data Platform included:

- Number of active users
- Public facing vs. private facing metrics
- Time to adapt

The group discussed concepts and strategies to consider when developing and implementing these types of projects:

- A phased funding approach may make sense to encourage creativity and minimize the risk of failure. For example, a small proof of concept could be explored with minimal investment to help refine development expectations and functionality.
- Similarly, the group discussed the idea of considering these initiatives as ‘services’ rather than ‘projects,’ thus focusing more development and allowing for evolution within the scope to achieve the end goal when the development process may be less known or defined.
- The idea of risk and balance within a given agency was discussed. It was suggested that an assessment of risk could be used to help prioritize projects; noting that an agreed upon level of risk could provide opportunity for acceptable failure with the hopes of gaining greater innovation.

#### Group 4 – Bike/Ped/Shared

The bike/ped/shared group discussed a variety of project concepts, including:

- Technology applications to better assess travel activity across all modes – currently, most travel monitoring focuses on vehicles and traffic, and there is a limited understanding of the movement of people across all modes (private vehicles, shared vehicles, bicycling, walking, etc.) – A more comprehensive understanding of travel activity across all modes would make an important contribution to understanding behavior so we can better optimize personal mobility; latent demand is an issue here too (where would people like to walk/bike but they currently cannot)
- Better understanding near-misses – go beyond fatality and crash data to have better detection of near-misses, particularly with bike/ped detection systems to identify safety enhancements
- Electronic enforcement – speed cameras; automated detection; electronic systems for users (e.g., bicyclists) to monitor and report conditions; video detection of parking in bike lanes to enhance monitoring and enforcement
- Assessing bike stress levels (using crowdsourced data)
- Mobility technology applications to support access for persons with disabilities
- Audible pedestrian technologies (testing a variety of different technologies)
- Enhanced pedestrian/bicyclist signal detection – e.g., countdown on wait time for pedestrians so they have a better understanding of when the light will change to “walk” (would help avoid crossing without the walk signal); change the focus so priority is not always given to vehicles, but to pedestrians/bicyclists
- Pilots for shared scooters and e-bikes: Geofencing to keep them in certain zones/locations (not on certain streets, sidewalks)
- Shared slow vehicles – self-driving shuttles
- Dockless carsharing (vehicles that can be parked anywhere to be picked up)
- Digital dynamic curbside management – to dynamically adjust curb restrictions

The group discussed various metrics to support prioritization, including:

- Surrogates for safety, such as near-misses, miles per hour (MPH), # of lanes

- Assessments of potential for increasing non-motorized use (e.g., before-and-after bicycle or pedestrian volumes)
- Geographic/corridor/route areas for priority:
  - Designated bike/ped priority areas, such as around transit stations
  - Bus stop areas (to enhance access to transit)
  - Bike capacity availability on transit
- Bring these types of metrics into all categories of projects, not just designated bike/ped/shared mode projects – like safety is part of everything, ensure that bicycle/ped access and safety are integrated into all TSMO pilots

Lastly, the group worked through how to extend regional significance of the projects, including:

- Partnering to standardize data regionally – ensure data collection from the private sector/shared modes is provided
- Identify partners and similar agencies or locations to replicate
- Identify lessons learned from projects to replicate

### Summary Discussion

Each group presented back to the full room some key takeaways from their breakout group discussions. The following specific ideas emerged from this discussion:



*Breakout group reporting back on the results of their discussions*

- Ability for ARC to work with other MPOs around the country to support adoption of innovative TSMO concepts (e.g., apps, for instance, concept of General Transit Feed Specification [GTFS],
  - ARC is open to the idea
  - Association of Metropolitan Planning Organizations (AMPO) could be a partner for this - Does pooled funding for research
- Stipend approach could be considered
  - Areas of interest for projects (for speed/timeliness) could be identified
  - Funding could be set aside for technology pilots instead of going through the formalized TIP process
  - FHWA has \$1M or less procurement flexibility

### ITS ARCHITECTURE UPDATE

Following the breakout groups, Patrick Chan (ConSysTec) provided an update on the Regional ITS Architecture, which is the plan documenting existing and planned ITS deployment in the region and provides a framework for ensuring institutional agreement and technical integration for the implementation of ITS projects. The architecture was updated after receiving feedback from the workshop held on March 8, 2019. A draft of the architecture website was created on March 24, 2019, and requests for comments on the website was distributed and open for 3 weeks. The current draft



update includes 55 stakeholders, 210 elements, 248 service package diagrams, 531 interfaces, and 97 projects. A comment spreadsheet was developed to track over 145 comments received.

Patrick raised a few questions that still need to be addressed. For instance, is electric charging stations a regional initiative? The response was that it is still in the concept phase.

## TSMO LOCAL AGENCY DEPLOYMENT GUIDE

Natalie Smusz-Mengelkoch led a discussion about the TSMO Local Agency Deployment Guide. She noted that the purpose of the guide is to help local agencies understand what is meant by TSMO and provide some guidelines for implementing TSMO strategies in ways that support the regional TSMO vision. She provided an overview of the proposed outline for the guide, and asked participants to identify what they would like to see in each section (“what do you need?”).



*Participants discussed needs associated with the Local Agency Deployment Guide*

The following topics were discussed and/or provided on worksheets that were handed in by participants:

Section of Guide	Needs or Ideas for Content
1. TSMO Deployment Guide purpose	n/a
2. Introduction to TSMO <ul style="list-style-type: none"> <li>• What is TSMO?</li> <li>• TSMO Business Case</li> <li>• ARC TSMO Vision</li> </ul>	<ul style="list-style-type: none"> <li>• Examples (nationally or internationally) or case studies</li> </ul>
3. TSMO Strategies – A Menu of Options	<ul style="list-style-type: none"> <li>• Multimodal strategies</li> <li>• Smart and connected ideas vs. roadway design</li> <li>• Resource guide of who is doing what in the region</li> <li>• Have a “score” type of meter, specifically for technology strategies in which the level of innovation or “proven technology” can be shown (like a star rating system) – some management decide on the type of innovation while others decide on more proven technologies</li> </ul>

	<ul style="list-style-type: none"> <li>• Emphasize safety across all modes – acknowledge need to design for safety with assumed human error; the largest determinant of crash severity is vehicle speed</li> </ul>
<p>4. Implementation – Advancing Effective Deployments</p> <ul style="list-style-type: none"> <li>• Systems Engineering</li> <li>• Technology considerations</li> <li>• Data</li> <li>• Funding</li> </ul>	<ul style="list-style-type: none"> <li>• Policies</li> <li>• Non-standard/innovative procurement methods/examples – examples of innovative procurement</li> <li>• Sample Request for Proposal (RFP) <ul style="list-style-type: none"> <li>• Examples of outcome-based contracting</li> <li>• Guideline of what to consider when moving towards RFP</li> <li>• May not be specific RFP example, but best practice approaches</li> </ul> </li> <li>• Funding examples</li> </ul>
<p>5. Reference Material</p> <ul style="list-style-type: none"> <li>• Specifications</li> <li>• Design guides</li> <li>• FHWA TSMO guide</li> <li>• ATDM guide</li> </ul>	<ul style="list-style-type: none"> <li>• Case studies/success stories/lessons learned <ul style="list-style-type: none"> <li>• National Operations Center for Excellence</li> <li>• Vision Zero best practices / speed management program best practices</li> </ul> </li> <li>• Project managers or subject matter experts involved in projects already implemented (Who should I talk to?)</li> </ul>

**NEXT STEPS**

Building on the results of the workshop, ARC and the consultant team will be working to use the input from the workshop to refine the pilot project prioritization process. The team will also be developing the TSMO Local Agency Deployment Guide based on the input, and will then begin to develop a TSMO Strategic Plan. The team is currently working on gap assessment to examine the Atlanta region’s current state in relation to the region’s vision, and in relation to practices in other regions.

Participants are encouraged to look for opportunities to participate in a future workshop, which will support development of to the TSMO Strategic Plan, with 5-year and 10-year action plans.

## Appendix A: Workshop Agenda



### ATLANTA REGIONAL TRANSPORTATION SYSTEM MANAGEMENT AND OPERATIONS (TSMO)

### TRANSPORTATION TECHNOLOGY WORKSHOP

**Date:** Monday, July 15, 2019, 9:00 AM – 12:00 PM

**Location:** Atlanta Regional Commission, 229 Peachtree Street, NE, Suite 100, Atlanta, Georgia

**Purpose:** 1) Review Data Governance Progress and Opportunities (2) Review ITS Architecture Status (3) Review Regional Pilot Project Evaluation Methodology (4) Review and contribute to the Local Agency Deployment Guidelines

**Agenda:**

- |          |                                                                                                                                                                                          |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9:00 AM  | Welcome and Introductions                                                                                                                                                                |
| 9:10 AM  | Status Update<br>Regional TSMO Vision and Goals<br>Data Governance Overview                                                                                                              |
| 9:25 AM  | Regional Pilot Project Review <ul style="list-style-type: none"><li>• Project Development</li><li>• Project Screening Methodology</li><li>• Project Prioritization Methodology</li></ul> |
| 10:00 AM | TSMO/Pilot Project Evaluation Breakout Groups                                                                                                                                            |
| 10:40 AM | BREAK                                                                                                                                                                                    |
| 10:50 AM | TSMO/Pilot Project Evaluation Group Discussion                                                                                                                                           |
| 11:20 AM | ITS Architecture Status Overview                                                                                                                                                         |
| 11:30 AM | Local Agency Deployment Guide Framework                                                                                                                                                  |
| 11:55 AM | Next Steps and Adjourn                                                                                                                                                                   |

**Appendix B: Workshop Participants**

<b>Name</b>	<b>Affiliation</b>
Emily Dwyer	GDOT
Sam Samu	SRTA
Renee Ray	Conduent
Kyung-Hwa Kim	ARC
Maxine Paul	MHP
Taylor Baxter	Chamblee
Daniel Studdard	ARC
Habte Kassa	GDOT
David Tolder	GDOT
Sarah Lamothe	GDOT
Ramon Maldonado	Maldonado-Burkett
Leslie Langley	AECOM
Naveed Jaffar	GCA, Inc.
Pascal Van Hentenryck	Georgia Tech
Brad Norman	Georgia Power
Jose Pagan-Oten	Athens/Renew ATL
Jordan Dandy	Atlanta DCP/OMP
Marc Start	AECOM
Wenter Harbal	Temple/ITS GA
Tejas Kotak	ARC
Shane Wiggins	Teezle
James Nguyen	Peachtree Corners
Caitlin Shankle	Sandy Springs
Scot Love	MB
Jamie Fischer	SRTA/GRTA

John Crocker	FTA
Cary Bearn	COA
Rey Angeles	Chamblee
Joseph Yawn	ARC
Kofi Wakhisi	ARC
Kirk Talbott	MARTA
Tim All	Forsyth
John Orr	ARC
Maria Roell	ARC
<i>Consultant Team</i>	
Michael Grant	ICF
Natalie Smusz-Mengelkoch	Kimley-Horn
Kenn Fink	Kimley-Horn
Beth Tucker	Kimley-Horn
David Craft	Kimley-Horn
Patrick Chan	ConSysTec