NOACA SHRP2 IMPLEMENTATION PLAN

The Northeast Ohio Areawide Coordinating Agency (NOACA) was awarded a federal technical assistance grant from the Federal Highway Administration (FHWA) at the end of 2013 as part of the Strategic Highway Research Program 2 (SHRP 2). The grant was to evaluate the region's transportation operations capabilities and develop an implementation plan to improve the reliability of the regional transportation system through management and operations. This plan describes the SHRP 2 program and grant, identifies challenges and outlines actions to address these challenges through deployment of transportation system management and operations (TSMO) strategies.

Background

SHRP 2 was authorized by Congress to address the biggest needs plaguing our nation's roadway system: reducing fatal and serious injury crashes, aging infrastructure that must be rehabilitated, and improving system reliability and congestion. NOACA, in partnership with the Ohio Department of Transportation (ODOT), was awarded a SHRP 2 technical assistance grant at the end of 2013 to explore issues of reliability. The SHRP 2 reliability focus is on developing basic analytical techniques, design procedures, and institutional approaches to address the events—such as crashes, work zones, special events, and inclement weather—that result in the unpredictable congestion that makes travel times unreliable.

SHRP 2 work products focus on increasing reliability and reducing congestion through deployment of transportation system management and operations (TSMO) strategies. TSMO refers to integrated transportation solutions that are intended to optimize the performance of the existing transportation infrastructure and address goals like mobility, reliability, safety and accessibility. TSMO is meant to replace and augment traditional larger scale, expensive infrastructure projects through a combination of incorporating advanced technologies to improve traffic operations and promoting travel options and programs that result in reduced demand for drive alone trips. Achieving this goal will significantly improve travel time reliability for both people and freight.

The SHRP 2 grant requires NOACA to complete three tasks:

1. Host a local agency workshop to develop an assessment of the region's transportation operations capabilities
2. Convene a senior leadership meeting of key Board members to share workshop results,
3. Use the assessment from the workshop and senior leadership feedback to develop a two-year implementation plan to guide NOACA's work plan and identify projects to improve our regional approach to management and operations of the regional transportation system.

NOACA SHRP 2 Grant

For Northeast Ohio, the SHRP 2 program is geared towards raising awareness at the opportunities for improving the effectiveness of TSMO. TSMO projects support many of the NOACA region's goals by:

- Improving travel time reliability
- Reducing crashes
- Improving transit on-time arrival
- Reduce travel delay
- Reduce air pollution
- Reduce drive-alone trips
- Reduce vehicle miles traveled

Assessing the NOACA region's approach to TSMO is a key focal point of the SHRP 2 reliability grant. To kickoff the SHRP 2 project, a workshop with local agency technical staff was held at NOACA's offices on January 29, sponsored by NOACA and ODOT with support from the Federal Highway Administration (FHWA) and the American Association of State Highway and Transportation Officials (AASHTO).

The purpose of the workshop was to assess the effectiveness of our current regional TSMO activities looking at things like incident management, traveler information, work zone management, Intelligent Transportation Systems (ITS) and traffic signal coordination and active traffic management. Workshop participants identified the current levels of capability regarding key processes, organization, staff and collaboration issues that may assist the state in defining the priorities among an array of possible actions to improve regional TSMO efforts.

Challenges

A few key problems were also discussed at the Workshop as challenges to improving the region's TSMO capabilities. TSMO projects like traffic signal upgrades and operational improvements have traditionally relied upon NOACA-controlled funding through the federal allocation of Congestion Mitigation and Air Quality (CMAQ) funds. Recently, the CMAQ program has gone away from a regionally driven allocation controlled by metropolitan planning organizations (MPOs) like NOACA to a statewide competitive grant program managed by ODOT. This change has created funding uncertainty as it relates to future of TSMO projects in the NOACA region. The first round of CMAQ project awards through the new statewide approach is currently underway. Identifying funding sources for TSMO projects will need to be a discussion topic of the NOACA Board.

Another challenge that surfaced during the workshop was related to staffing resources. The recent economic downturn has caused staffing shortages at local agencies across Northeast Ohio. This has impacted local transportation maintenance and operations. Additionally, because TSMO projects do not result in ribbon cuttings and other politically attractive events, staffing for operations is not a key focus for local agencies. A combination of short staffing and lack of

political support has created problems with maintaining and operation the existing system and limiting the ability to deploy new TSMO projects. A primary focal point of the discussion was the inability of many jurisdictions, like the City of Cleveland to keep up with basic signal timing and coordination. This causes a strain on law enforcement staffing to manage traffic related to special events and inclement weather management. Lack of routine signal timing and coordination also negatively impacts the reliability of the transportation system as buses and motorists experience unnecessary delay. Addressing staffing issues and support for routine signal timing and coordination with shared services agreements and other best practices will need to be a discussion topic for regional decision-makers.

How do we move forward?

The outcome of the SHRP 2 workshop was a consensus set of priorities to improve the region's TSMO activities and is the foundation for this implementation plan. Over the next two years as part of SHRP 2 implementation plan, NOACA will begin working with local partners to advance TSMO in the region by focusing on:

Focus Area	Actions
Business Process – Establish the framework for suitable transportation system management and operations (TSMO) planning and programming activities.	1. Develop a regional TSMO strategy that identifies areas of focus and a list of priority projects for the next 5 – 10 years focused on multi-jurisdictional corridors and GCRTA's Priority Transit Corridors. 2. Explore dedicated funding source to support the regional TSMO strategy.
Systems & Technology – Introduce systems engineering into project development process.	3. Develop systems engineering best practice toolkit to support local agency project development. 4. Identify advanced technologies for regional deployment and integration with the existing system. 5. Inventory of existing TSMO technologies in the region, when it was implemented and how it is being maintained.
Performance Measurement – Identify output and outcome performance measures to monitor the region's TSMO activities.	6. Compile and assess regional performance-related data sources and identify how and when they are being used. 7. Develop options to collect data to fill any gaps.
Culture – Develop business case for TSMO and continuous improvement of operations performance.	8. Compile local case studies about the strategies and benefits of TSMO investments. 9. Develop educational materials to make business case for investing in TSMO to NOACA Board, commercial interests, local agencies and the general public.
Organization & Staffing – Identify specific organizational concepts and core capacity	10. Create a Safety & Operations Advisory Council to advise the NOACA Committees, guide the development of a regional TSMO strategy and develop TSMO projects for

needs to support regional TSMO advancement.	implementation.
Collaboration – Develop regional collaborative approach to TSMO implementation.	11. Evaluate staff resources across local agencies for supporting TSMO. 12. Explore best practices and opportunities for resource sharing to support TSMO across the NOACA region.

This work will be initiated over the next two years, but much of the implementation of TSMO strategies will be continue over the next 5 years.

Next Steps

The following implementation plan further identifies the regional challenges and additional recommendations to advance TSMO. It includes identification of goals, objectives and strategies to guide NOACA's work program for the next two years and beyond. The plan also identifies resources from NOACA and local agencies, ODOT and FHWA that will be needed to assist with this work.

NOACA staff will be working with ODOT's statewide SHRP 2 project to look for areas of overlap. This implementation plan will be presented with the assistance of FHWA staff to a Senior Leadership Group that comprises NOACA Board members from the City of Cleveland, Cuyahoga County, ODOT District 12, and GCRTA in July. The plan will also be presented as informational to the following NOACA Committees:

- Transportation Subcommittee – July 18, 2014 from 10:30am – 12pm
- Planning & Programming Committee – August 8, 2014 from 11:00am – 1:00pm
- Executive Committee – September 10 from 10:30am – 12:30pm
- NOACA Board – October 10 from 10:00am – 1:00pm

The focal point of the initial presentation will be on the outline of the SHRP 2 implementation plan and the creation of the Safety & Operations Council (SOC). The SOC will be comprised of local agency technical staff and will advise the Transportation Subcommittee and guide NOACA staff in the SHRP 2 project and implementation efforts to improve regional TSMO. The goal is to have the first SOC meeting in late September or early October. The presentation to the NOACA Board will be focused on making the business case for increased TSMO.

TOPIC: Business Process – Establish the framework for suitable transportation system management and operations (TSMO) planning and programming activities.

Objective 1: Identify key priorities and develop regional plan for TSMO infrastructure and real-time operations.

1. Review current NOACA mission, vision and goals with respect to TSMO.
2. Review current approaches in the NOACA region to TSMO deployment and relationships with existing agency planning and development processes.
3. Identify agency operations objectives and priorities for implementation of TSMO strategies and develop/update regional plans.
4. Develop operations concepts and systems architecture for strategies.
5. Incorporate TSMO within the regional planning process and coordinate proposed actions with state and local agencies.

Objective 2: Identify initial resources for TSMO strategies.

1. Develop cost estimate methodology for TSMO projects including capital, operating and maintenance.
2. Develop short-term and long-term funding strategy (capital, maintenance and staffing resources).
3. Develop cooperating approach to NOACA MPO programming and budgeting for TSMO projects.
4. Analyze special needs and requirements for efficient TSMO project development.

Objective 3: Analyze special needs and requirements for efficient TSMO project development.

1. Coordinate implementation of TSMO-related infrastructure into other ongoing project development activities.

Actions	Timeline for Completion	FHWA Resources Needed
Develop a regional TSMO strategy that: a. Identifies areas of focus b. List of priority projects and for the next 5 – 10 years focused on multi-jurisdictional corridors and GCRTA's Priority Transit Corridors c. Includes strategies to better implement existing ITS architecture d. Explores identification of dedicated funding to support TSMO strategy implementation	• Scope developed with local agency partners by December 2014. • Identification of funding and begin plan by April 2015 and completed July 2016.	<u>Peer Exchange</u>: Organize with selected MPOs and DOTs to discuss integrating operations into planning and DOTS working with MPOs on regional TSMO. <u>Training & Workshops:</u> • Advancing Planning for Operations in Metropolitan Areas • Improving Business Processes for Arterial Management
Develop bottleneck report in partnership with ODOT, identifying near-term, low-cost operation solutions.	• Scope developed with local agency partners by March 2015. • Begin work by July 2015.	<u>Funding Support:</u> Assist with identification of funding for TSMO strategy development.

<table>
<tr><th colspan="3">TOPIC: Systems & Technology – Introduce systems engineering into project development process.</th></tr>
<tr><td colspan="3">Objective 1: Ensure NOACA and member agencies are an active participant in the development, maintenance and implementation of the regional ITS architecture for planning and project development.
1. Assign responsibility for leading architecture update and implementation to a qualified individual within NOACA.
2. Convene Architecture Review Committee.
3. Monitor system developments and other agency activities to ensure that architecture remains up to date.</td></tr>
<tr><td colspan="3">Objective 2: Establish requirements that all NOACA projects utilize the systems engineering process.
1. Adopt the systems engineering process as a requirement for procurement and development of new systems.
2. Provide training to agency and stakeholder personnel involved at all levels in high-tech systems development.</td></tr>
<tr><td colspan="3">Objective 3: Identify applicable standards for all new system implementations.
1. Identify and require relevant standards as an integral step of the system design process.</td></tr>
<tr><th>Actions</th><th>Timeline for Completion</th><th>Resources Needed</th></tr>
<tr><td>Develop systems engineering best practice toolkit to support local agency project development.</td><td>• Scope developed with local agency partners by March 2015.
• Develop after completion of TSMO strategic plan January 2016.</td><td rowspan="4"><u>Technical Assistance</u>: FHWA and ODOT assistance with systems engineering best practice development.

<u>Funding Support:</u> Assist with system engineering best practices toolkit.

<u>Training & Workshops:</u>
• Regional Architecture Use & Maintenance Workshop/Seminar
• Regional Architecture Update Quick-Start Workshop

<u>Informational Materials:</u>
• Regional ITS Architecture Guidance
• Systems Engineering Guidebook
• Systems Engineering for ITS
• Applying a Regional ITS Architecture to Support Planning for Operations: A Primer</td></tr>
<tr><td>As part of the regional TSMO strategy include:
a. Inventory of existing ITS technologies.
b. Identification of advanced technologies for regional deployment.
c. Investigation of regionalized approaches to operations and maintenance.
d. Revisiting proposal for establishing a regional traffic management center for Northeast Ohio. The focus will be on the arterial system and integrating it into the statewide system.</td><td>• Develop as part of regional TSMO strategy and completed by July 2016.</td></tr>
<tr><td>Review and update ITS Architecture and obtain multijurisdictional buy-in.</td><td>• Scope developed with local agency partners by July 2015.
• Develop after completion of TSMO strategic plan December 2016.</td></tr>
<tr><td>Identify one ITS system as the basis to build regional consensus on regional cooperation (i.e. emergency signal preemption).</td><td>• Use as initial meeting topic for new Safety & Operations Council in September/October 2014.</td></tr>
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<tr><th colspan="3">TOPIC: Performance Measurement – Identify output and outcome performance measures to monitor the region's TSMO activities.</th></tr>
<tr><td colspan="3">Objective 1: Identify output performance measures to support development and evaluation of TSMO activities.
1. Identify operational activities to be monitored.
2. Review FHWA Office of Operations activities related to performance measures for incident management, work zone management, weather management and signal systems.
3. Develop initial strategy for performance measures using available output data.</td></tr>
<tr><td colspan="3">Objective 2: Collect readily available data.
1. Collect output performance measures from data that are already being collected.
2. Identify output performance measure data gaps that will require new data collection.</td></tr>
<tr><th>Actions</th><th>Timeline for Completion</th><th>Resources Needed</th></tr>
<tr><td>Compile and assess regional performance-related data sources and identify how and when they are being used.
• Develop options to collect data to fill the data gap.</td><td>• Complete inventory by July 2015.</td><td rowspan="2"><u>Technical Assistance</u>: FHWA and ODOT assistance with compiling performance-related data.

Transportation Performance Management Technical Assistance Program

<u>Peer Exchange</u>: AASHTO Standing Committee on Performance Management.

<u>Training & Workshops:</u>
• Operations Performance Measures Workshop

<u>Funding Support:</u> Assist with identification of funding for data collection to fill data gaps.</td></tr>
<tr><td>Assess use of INRIX data, including if it has sufficient arterial coverage.</td><td>• Complete assessment by July 2015.</td></tr>
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TOPIC: Culture – Develop business case for TSMO and continuous improvement of operations performance.		
Objective 1: Provide technical justification for TSMO regarding customer service-related performance. 1. Develop the business case for TSMO relative to the jurisdiction. 2. Develop strategy to familiarize leadership and staff with TSMO. 3. Develop talking points to support TSMO program both within NOACA and externally.		
Objective 2: Introduce value and concepts regarding TSMO to external stakeholders and general public. 1. Capitalize on external events to highlight TSMO importance in external communications.		
Objective 3: Review authorizations needed for effective agency role in TSMO strategies. 1. Review constraints/opportunities related to planning and programming with local agencies, ODOT and public safety agencies and develop approaches to resolve them.		
Actions	**Timeline for Completion**	**Resources Needed**
Compile local case studies about the strategies and benefits of TSMO investments.	• Develop scope and gather information December 2014. • Complete case studies as part of TSMO strategic plan December 2015.	<u>Technical Assistance</u>: FHWA and ODOT assistance with developing business case primer and TSMO briefing for senior officials. <u>Peer Exchange</u>: AASHTO Standing Committee on Systems Operations & Management. <u>Funding Support:</u> Assist with identification of funding for case study development. <u>Informational Materials:</u> • Business Case Primer • Operations Executive briefing/presentation material • Getting the Most from Your Transportation Systems Investments
Develop educational materials to make business case for investing in TSMO to NOACA Board, commercial interests, local agencies and the general public.	• Develop initial educational materials for September Board meeting. • Refine as part of regional TSMO strategy and complete July 2016 including an emphasis on construction management.	
Investigate state of the practice and FHWA resources on forecasting future benefits of TSMO applications and technologies.	• December 2015.	

TOPIC: Organization & Staffing – Identify specific organizational concepts and core capacity needs to support regional TSMO advancement.

Objective 1: Evaluate concepts to improve staffing and local agency support of TSMO.

1. Conduct evaluation of staff capabilities and number of staff both within NOACA and local agencies to determine optimal level and function.
2. Investigate best practices, examples and opportunities for resource sharing, including forum for convening participants for discussion.

Actions	Timeline for Completion	Resources Needed
Create a Safety & Operations Council (SOC) to advise the NOACA Committees and develop TSMO projects for implementation.	• September 2014.	Technical Assistance: FHWA and ODOT assistance to address local TSMO staffing challenges.
Develop materials that document the local staffing challenges to support TSMO across the region.	• Discussion topic for SHRP 2 Senior Leadership meeting in July 2014 and future NOACA Committee & Board discussions.	

TOPIC: Collaboration – Develop regional collaborative approach to TSMO implementation.

Objective 1: Create regional forum to coordinate TSMO initiatives and support regional collaboration and discussion.

1. Establish a regional forum for considering and resolving TSMO collaboration issues.
2. Aggressively support and participate in ODOT District 12 traffic incident management team meetings.
3. Leverage incident management forum to cover all related topics: engineering, safety, education and evaluation.
4. Develop best practices tool to assist with regional special events management.

Actions	Timeline for Completion	Resources Needed
Evaluate staff resources across local agencies for supporting TSMO.	• Use as initial meeting topic for new SOC in September 2014.	Technical Assistance: FHWA and ODOT assistance with best practices, examples and opportunities for resource sharing.
Explore best practices and opportunities for resource sharing to support TSMO across the NOACA region.	• Use as initial meeting topic for new SOC in September 2014.	