SHRP2 Round 7

Implementation Assistance Program Webinar

Regional Operations Forum (L36)

March 21, 2016

U.S. Department of Transportation
Federal Highway Administration

AMERICAN ASSOCIATION of STATE HIGHWAY and TRANSPORTATION OFFICIALS

AASHTO

Agenda

- **SHRP2 Overview**
  - SHRP2 at a Glance
  - Focus areas
  - Implementation update
- **Implementation Assistance Program**
- **Technical product description**
- **Implementation assistance opportunities timeline**
- **Questions**

SHRP2 at a Glance

- **SHRP2 Solutions** – 63 products

- **Solution Development** – processes, software, testing procedures, and specifications

- **Field Testing** – refined in the field

- **Implementation** – 350 transportation projects; adopt as standard practice

- **SHRP2 Education Connection** – connecting next-generation professionals with next-generation innovations

350
SHRP2 projects nationwide
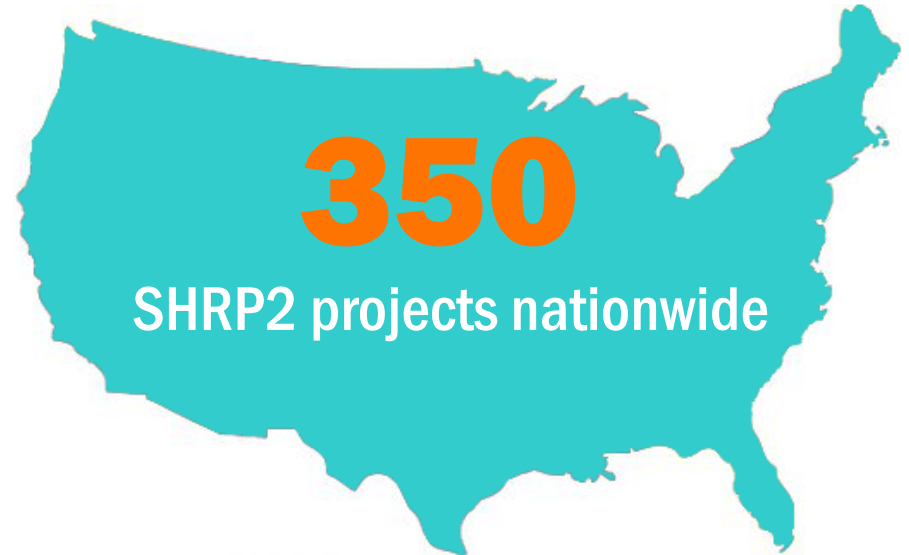
Focus Areas

Safety: fostering safer driving through analysis of driver, roadway, and vehicle factors in crashes, near crashes, and ordinary driving

Capacity: planning and designing a highway system that offers minimum disruption and meets the environmental and economic needs of the community
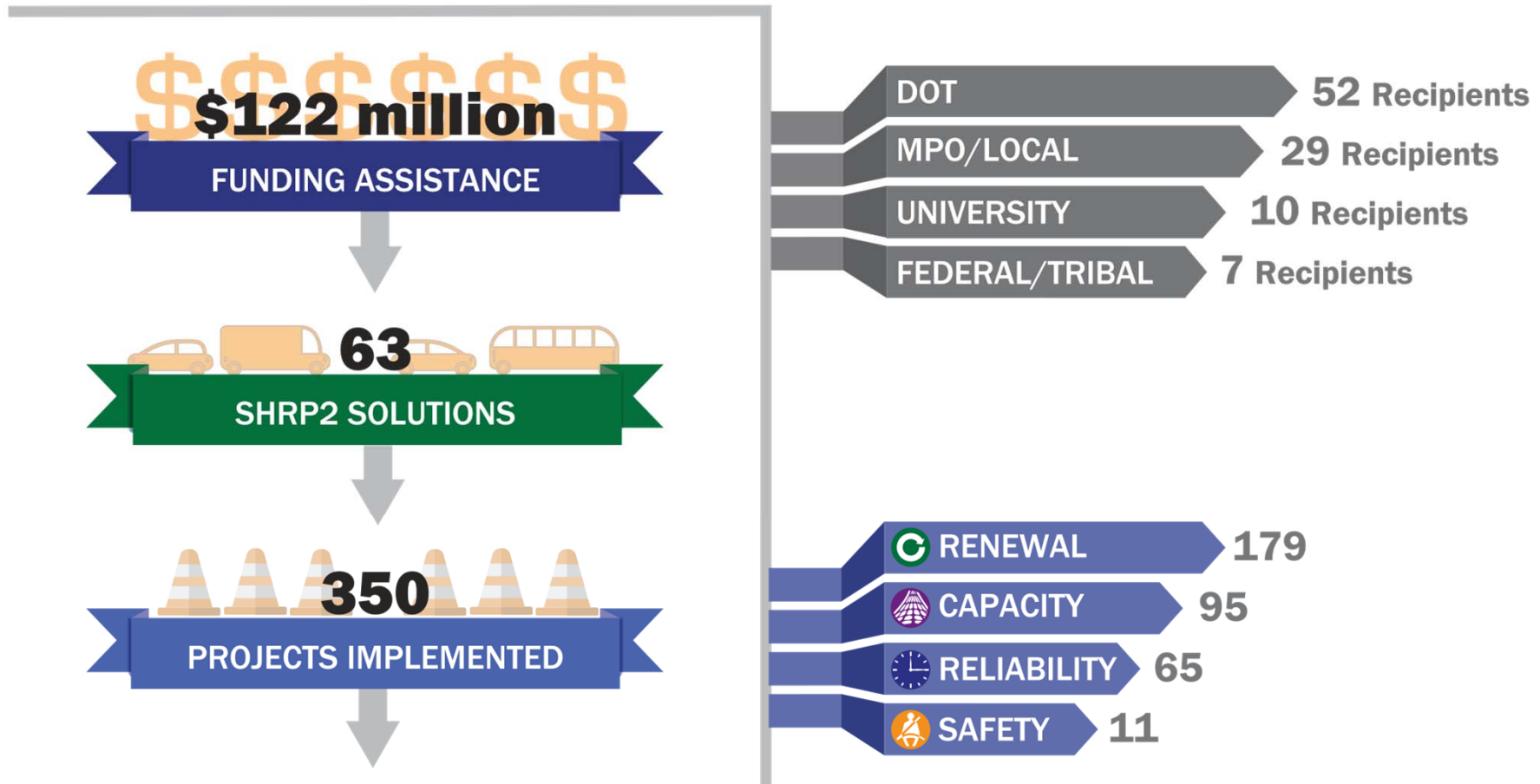
Renewal: rapid maintenance and repair of the deteriorating infrastructure using already-available resources, innovations, and technologies
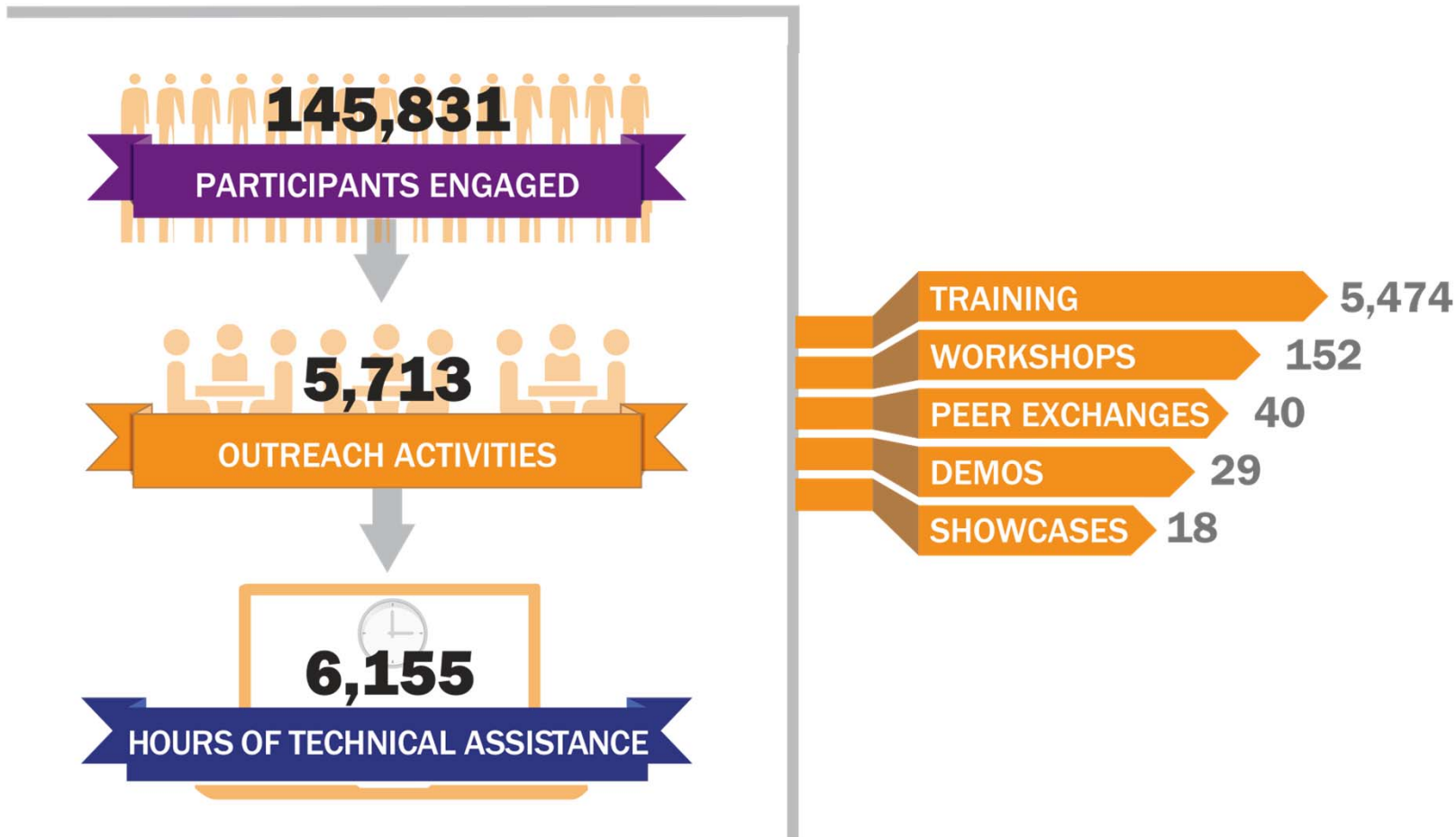
Reliability: reducing congestion and creating more predictable travel times through better operations

SHRP2 Implementation: Moving Us Forward

$122 million — FUNDING ASSISTANCE

63 — SHRP2 SOLUTIONS

350 — PROJECTS IMPLEMENTED

	Recipients
DOT	52
MPO/LOCAL	29
UNIVERSITY	10
FEDERAL/TRIBAL	7

RENEWAL	179
CAPACITY	95
RELIABILITY	65
SAFETY	11

SHRP2 Implementation: Moving Us Forward

145,831
PARTICIPANTS ENGAGED

5,713
OUTREACH ACTIVITIES

6,155
HOURS OF TECHNICAL ASSISTANCE

TRAINING — 5,474
WORKSHOPS — 152
PEER EXCHANGES — 40
DEMOS — 29
SHOWCASES — 18

SHRP2 Implementation Assistance Program

- Designed to help State DOTs, MPOs, local agencies, and other interested organizations deploy SHRP2 Solutions.

Proof of Concept Pilot	Lead Adopter Incentive	User Incentive
To evaluate product readiness.	To help offset costs associated with product implementation and risk mitigation.	To support implementation activities, such as conducting internal assessments, changing processes, and organizing peer exchanges.

Regional Operations Forum (L36)

Challenge

- Many new strategies to improve travel-time reliability and safety are not yet routinely incorporated into practices, business processes, and decision making.

- Some agencies may experience success with certain approaches, but those successes and associated lessons learned are not regularly transferred to other agencies.

- Development of TSM&O expertise through training and peer exchange is needed.

Solution

- *Regional Operations Forum* (L36) - a new 4-day total-immersion workshop that offers transportation agency leaders, practitioners, and their partners the opportunity to learn about leading approaches related to operations and reliability and how to take advantage of the many advances being made in operations.

Regional Operations Forum (L36)

Benefits

- The new curriculum transmits the latest strategies and technologies to transportation agency managers and leaders.

- Helps agencies immediately enhance their transportation systems management and operations (TSM&O) practices and programs.

- Results in the mobility, safety, economic, and environmental benefits generated by more reliable travel times.

About TSM&O

Transportation Systems Management and Operations (TSM&O)

– An integrated program to optimize the performance of existing infrastructure through the implementation of systems, services, and projects designed to preserve capacity and improve security, safety, and reliability of the transportation system.

(Source: Planning for Operations Glossary)

- Getting the most out of the infrastructure we have
- "Buying" the most mobility at the lowest possible cost

Goals of the Forum

- Mainstream TSM&O into the culture of state DOTs and their partners by transitioning the state of the art closer to the state of the practice.

- Strengthen TSM&O programs at the state and regional level.

- Develop a community of practice through the development of a peer network.

- Provide the next generation of leadership with the necessary skills for advancing TSM&O.

- Provide awareness on effective use of SHRP2 Reliability products.

About the Product

- Provides transportation agencies and their partners with education and training on TSM&O business processes, organizational capabilities, operations and planning, and technical and analytical tools.

"a TSM&O on-boarding program"

– Brad Freeze, traffic operations director at Tennessee DOT

Components of the ROF

- Pre-study
- Instructor presentations with group exercises and discussion
- Video taped speaker sessions (usually 2)
- Team exercise
- Technical tour or local site presentation (depending on site)
- Agency implementation plans
- Follow up

- Peer exchange throughout
- Typical size is around 30 people

Session Topics

- Business topics such as communicating the value of operations and performance measures.

- Technical topics such as traffic incident management, traveler information, and work zones.

- Institutional topics such as planning for operations and how to organize for operations.

- Emerging topics such as connected vehicles and managing a corridor.

Organization/Process	TSM&O practices	Emerging topics

TSM&O CMM assessment
Performance measures
Planning/programming
Systems engineering
Organizing for operations
Communicating the value of operations
	TIM/emergency operations
	Work zones
	Road weather
	Planned special events
	Freight
	Traveler information
		Corridor management
		  -ICM
		  -ATDM
		  -Managed lanes
		Connected vehicles

Exercises

- Group exercises – during sessions – by seating
- Team exercise – working sessions – mixed by State
- Implementation plan – working session by Agency
  - Discuss, Develop, Present
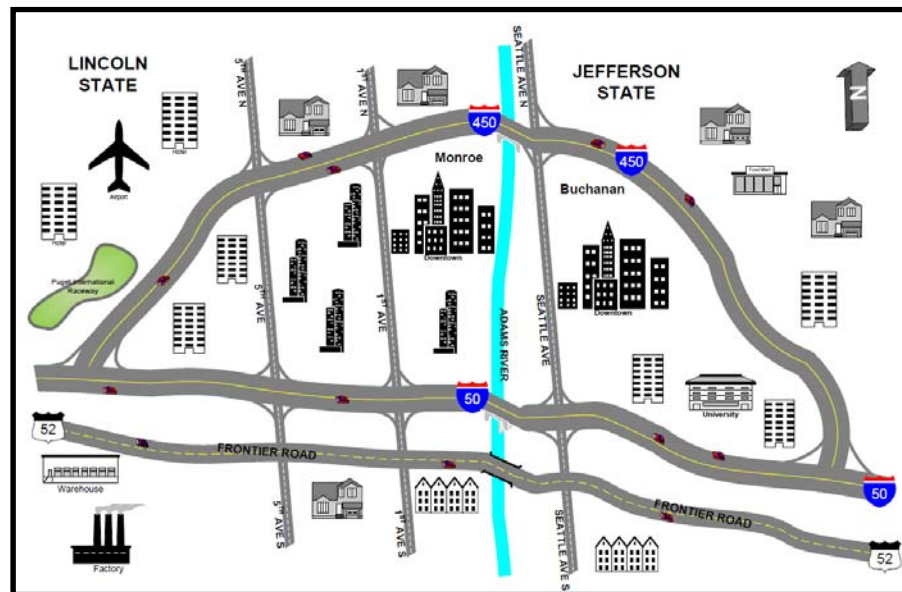
Group Exercise Scenario - Example

- Multi-vehicle collision eastbound on the I-50 Interstate Bridge, connecting the states of Lincoln and Jefferson in the Monroe-Buchanan metropolitan area
  - Key commuting corridor, dense ITS device coverage
  - 4 lanes in each direction plus an HOV lane in each direction
  - Key interstate freight corridor
  - AADT > 250,000
  - Alternate freeway route 8 miles to the north (operates @ capacity), 3 lanes in each direction, 175,000 AADT
  - Alternate arterial 1 mile to the south (4 lanes, signalized, CBD)
- Tanker truck carrying a flammable load is involved
- Break into teams to discuss the next TIM actions

You are operations managers at the LDOT TMC

Example Agenda

AGENDA - REGIONAL OPERATIONS FORUM - DALLAS, TEXAS

	February 22, 2016 Monday	February 22, 2016 Tuesday	February 24, 2016 Wednesday	February 25, 2016 Thursday	February 26, 2016 Friday
8:00 AM					Team Exercise Presentations
8:30 AM					
9:00 AM		Performance Measurement	Traffic Incident Management, Emergency Operations, and Planned Events	Managing a Corridor includes ICM, ATM, Managed Lanes	Connected Vehicles & Future of Transportation VIDEO
9:30 AM					
10:00 AM					Break
10:30 AM	Welcome, Opening				Agency Implementation Plans Presentations
11:00 AM	Participant Introductions				
11:30 AM	LUNCH	LUNCH	LUNCH	LUNCH	Presentation of Certificates
12:00 PM					Evaluation
12:30 PM	Review of Capability Self Evauations	Facilitating Goods Movement VIDEO	Road Weather	How to Organize for Operations	
1:00 PM					
1:30 PM		Break		Break	
2:00 PM			Traveler Information and Operations		
2:30 PM	Introduction to Team Exercise	Systems Engineering		Communicating the Value of Operations	
3:00 PM			Break		
3:30 PM	Break	US-75 Integrated Corridor Management System	Work Zones	Applying What You Learned	
4:00 PM					
4:30 PM	Planning and Programming for Operations	Evaluation	Evaluation	Evaluation	
5:00 PM					
5:30 PM		Team Exercise Meetings	Team Exercise Meetings	Agency Meetings - Development of Implementation Plans	
6:00 PM	Evaluation				
6:30 PM	DINNER	DINNER	DINNER	DINNER ON OWN	
7:00 PM				Optional Group Activity	

Primary Audience

- Director/manager of traffic operations

- Director/manager of transportation planning

- District/division/State traffic engineers

- Regional director/operations chief

- Director of maintenance/construction

- Information technology managers

- Transportation operations/management center manager

- Manager of traffic engineering in State or local jurisdiction

- Senior transportation planner in State or local jurisdiction or MPO

- State police and other public safety managers

Managing Non-Recurring Congestion and TSMO

Managing and preparing for these events is an operational philosophy that supports and becomes a foundation for transportation system management and operations (TSMO).

Desired Outcomes of the ROF

- Understand the importance and value of a TSM&O focus within their agency.

- Know how to plan, program and organize for TSM&O.

- More effectively use a management and operations perspective in identifying and implementing cost-effective solutions to address transportation problems.

- Measure the operational performance of their transportation network.

- Work with a peer network of regional agencies to share ideas/information, learn from the activities of others, and work together more effectively.

- Apply where applicable, the results of the SHRP2 Reliability research and other nationwide systems management and operations research programs.

Why is this training needed?

- TSM&O field still relatively new and changes rapidly.

- Many college engineering graduates have limited foundation in TSM&O concepts and strategies – especially coordinated application.

- Range of practitioners contribute to TSM&O – enables them to come together and learn together and from each other how to more effectively and collaboratively manage and operate their transportation facilities.

Deployment Experiences to Date

Experiences to Date

- Who has participated in/deployed the ROF

- Benefits
  - Reported results
  - Peer exchange examples
  - Participant quotes

L36 Implementation Sites

Legend:
- ▲ Statewide ROF
- ★ NW Passage ROF
- ★ CA District ROF

- NW Pilot (green)
- SW Pilot (dark blue)
- SE Pilot (light blue)
- MW Pilot (orange)
- NE Pilot (peach)

- Coastal ROF (light green)
- Plains/SC ROF (red)
- Mid-Atl ROF (dark green)
- Mid-East ROF (yellow)

SHRP2 SOLUTIONS | 23
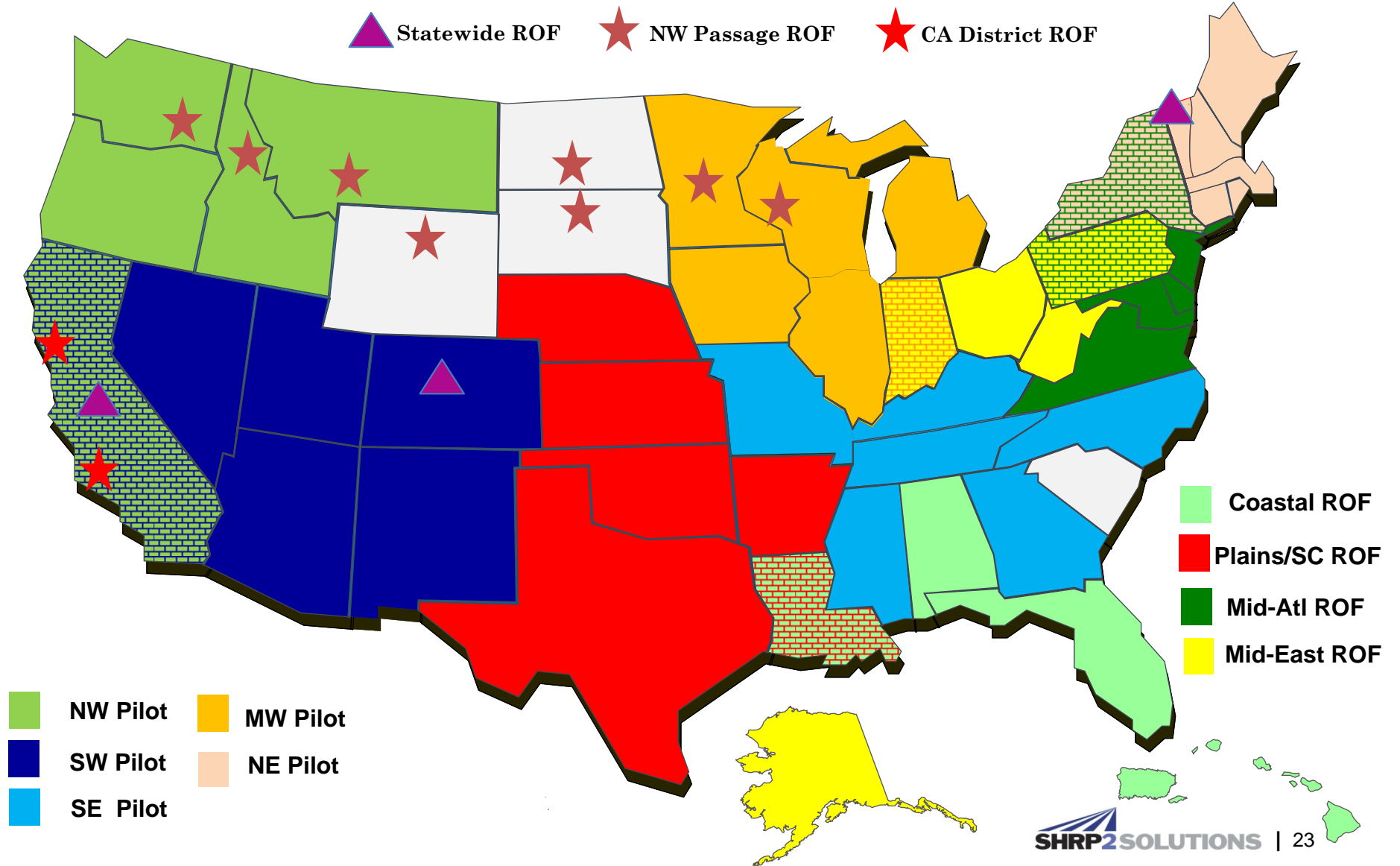
Participant Reported Results

- **Knowledge**
  - Information on how to improve the state of the practice using ATM and ICM
  - Appreciation of the promise and challenges associated with Connected Vehicles/Autonomous Vehicles
  - Awareness of linkage with performance measurement, TSM&O planning, and day-to-day TSM&O

- **Peers**
  - Sharing of experiences with neighboring states
  - New ideas based on what worked elsewhere
  - Network to contact when questions/issues arise

Participant Reported Results (cont.)

- **Motivation and Direction**
  - Appreciation of the importance of TSM&O
  - Specific action items generated from their agency implementation plan
  - High level of intent to change the way their agency approaches TSM&O
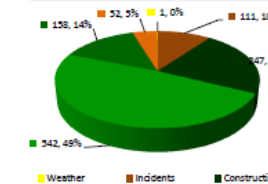 - Desire to collaborate more with others involved in TSM&O

- **Resources**
  - Awareness of SHRP2 project results/products
  - Equipped with resources to assist with TSM&O Implementation
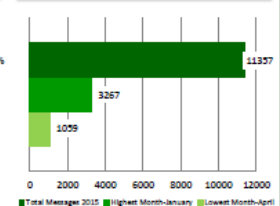
Peer Exchange – Sharing Ideas and Practices

- **Demos of State TSM&O dashboards**
  - NH DOT Dashboard – TMC Operations

- **TSM&O initiative in Lincoln, NE**
  - Explaining the initiative
  - How the case was built for it

DMS Messages — June 2015

Selling Itself — **LINCOLN** PUBLIC WORKS AND UTILITIES

GREEN LIGHT LINCOLN — IT'S GO TIME

- New signal system management software and hardware
- New intersection detection systems
- New traffic signal displays and signal phasing alternatives
- Deployment of Intelligent Transportation Systems
- Formal signal optimization (re-timing) program, corridor wide
- Improved traffic monitoring and incident management capabilities
- Reduced travel times, delays, and stops
- Reduced vehicle emissions, and pollutants
- Less fuel used, and savings at the pump
- Reduction in number and severity of crashes
- Smoother traffic flow, and less driver frustration
- Delaying the need for major capacity improvement project expenditures

Improvements — **LINCOLN** PUBLIC WORKS AND UTILITIES

- Total System Strategy
- Leads to Signal Optimization
  - Reduced delays, stops, travel time
  - Less fuel used, pollutants
  - Quality of life
  - Delay Capacity Projects

ROF Well-Received – What did you gain?

Designer:

– "This course was an intensive introduction to TSM&O for me. I will definitely use what I learned to not only try to include TSM&O items in future design but collaborate with the ITS personnel to help implement TSM&O in design."

MPO:

– "The ROF provided a wealth of information that I can take back and put into practice at my MPO. I would highly recommend it to all operations professionals, and to MPO staff in particular."

Law Enforcement:

– "As an enforcement officer it was a very useful forum. Understanding what DOT engineers do with the various traffic systems will help me in the future...I would recommend this course to other enforcement leaders."

ROF Well-Received – What did you gain?

Traffic Operations Director:

– "It was very informative and I really liked hearing what other states and agencies are doing to solve our transportation issues."

ITS Engineer:

– "The course materials were useful and it was great seeing so many aspects of TSM&O rolled into one, when you're used to treating many of the aspects separately. The primary benefit of the ROF is the networking with other agencies. You learn so much about the state of the practice from the practitioners themselves and you realize that you don't have to re-invent the wheel every single time. I would recommend the ROF, absolutely."

Overall Implementation Effort

SHRP2 L36 Implementation Plan

- Deliver ROFs

- Explore alternate formats for ROF

- Develop sustainability plan

- Implement plan

- Evaluate

Why is this IAP offering needed?

Current TSM&O Training

1. What type of TSM&O training for your state have (select all that apply)

☐ Program of TSM&O courses (by itself or via local collaboration)	4%
☐ One-time orientation course	0%
☐ Annual conference/workshop	24%
☐ Rely on FHWA training/workshops	88%
☐ Rely on the National Ops Academy	24%
☐ On-the-job training	32%
☐ Other (specify in chat pod)	4%

- State has policy/requirement for TSM&O training – 74% No

- State has a TSM&O curriculum? – 81% No, 19% Not sure

- TSM&O workforce development is a big need

  - NOCoE Summit

Why is this IAP offering needed?

- Looking at ways for expanded, long-term use and benefits from the L36 ROFs

  - Cost and time to deliver ROFs limits offerings in current format

  - Want to reach more TSMO practitioners

- Looking to IAP Round 7 for ideas from States on deployment at State level

  - Caltrans example

State DOT use of ROF materials and approach to advance TSM&O is important to the long-term value of the ROF.

Caltrans Sub-Regional Corridor Operations Forum/CMM Workshops

Nick Compin, PhD
Statewide Connected Corridors Pilot Manager
California Department of
Transportation HQ

Mitchell Prevost
TSM&O/ITS Coordinator
California Department of
Transportation HQ

U.S. Department of Transportation
Federal Highway Administration

AMERICAN ASSOCIATION
of STATE HIGHWAY and
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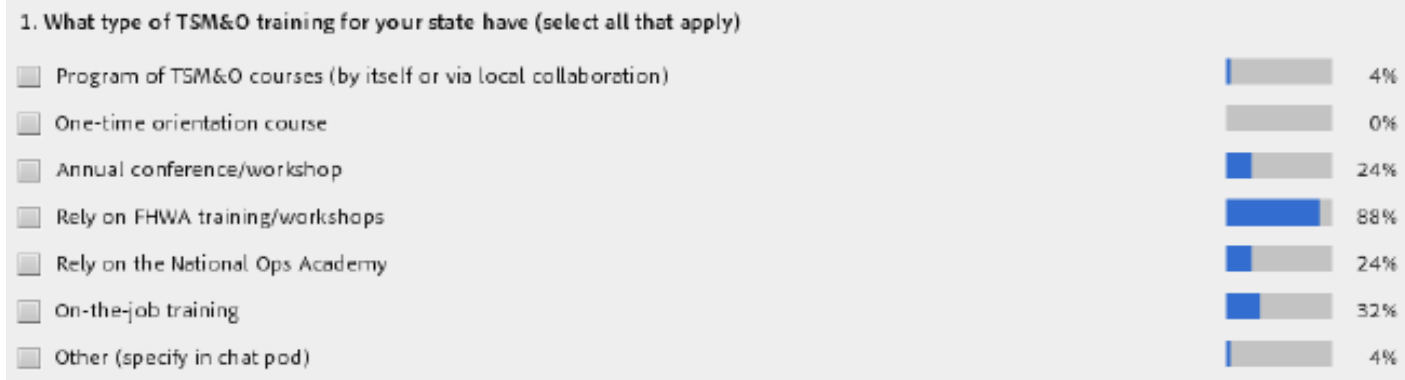AASHTO

SHRP2 Implementation Assistance Program

- FHWA Early Adopter award for *Organizing for Reliability* (L01/L06)

- Great – But what do we do with it?

SHRP2 Implementation Assistance Program

SHRP2 Implementation Assistance Program

FHWA Regional Operations Forum/CMM

- **March of 2013 – Los Angeles**
  - Caltrans Districts and Headquarters
  - Regional Agency Partners
  - Local Agency Partners
  - Other Agency Partners

- **Action plan identified priority actions in each CMM dimension**

L01/L06 Early Adopter Assistance

#1 Action for the Collaboration Dimension

- Support Transportation System Management and Operations (TSM&O) Deployment

  - Statewide ROF/CMM Workshops

Connected Corridors – California's Integrated Corridor Management (ICM)

Statewide Program

- 5 Corridors
  - I-210 D7 Los Angeles
  - I-80 D4 SF Bay Area
  - SR-57 D12 Orange County
  - I-110 D7 Los Angeles
  - SR-91 D12 Orange County
- Funding
- Standards
- HQ Traffic Ops Reorganization

Pilot Projects

- D7 I-210
  - Decision Support System (DSS)
    - Forecasting & Modeling
    - Data Hub
    - Rules Engine
- D4 I-80
  - Overhead Gantries
  - Speed Advisories
- D12 SR-57/Anaheim Triangle
  - Data sharing
  - Special event management
- District Traffic Ops Reorganization

L01/L06 Early Adopter Award

- **Bring Caltrans staff and partners together**
  - Foster partnerships
  - Opportunities and benefits of TSM&O

- **Statewide TSM&O program**
  - To change Caltrans' culture
  - To embrace system management and operations

L01/L06 Early Adopter Award

- FHWA 5-day Regional Operations/CMM Workshops

  - Too long for our local partners

  - Too general considering our ICM aspirations

I-210 Connected Corridor Pilot – Pasadena, CA

Managed Freeway
Phase 1

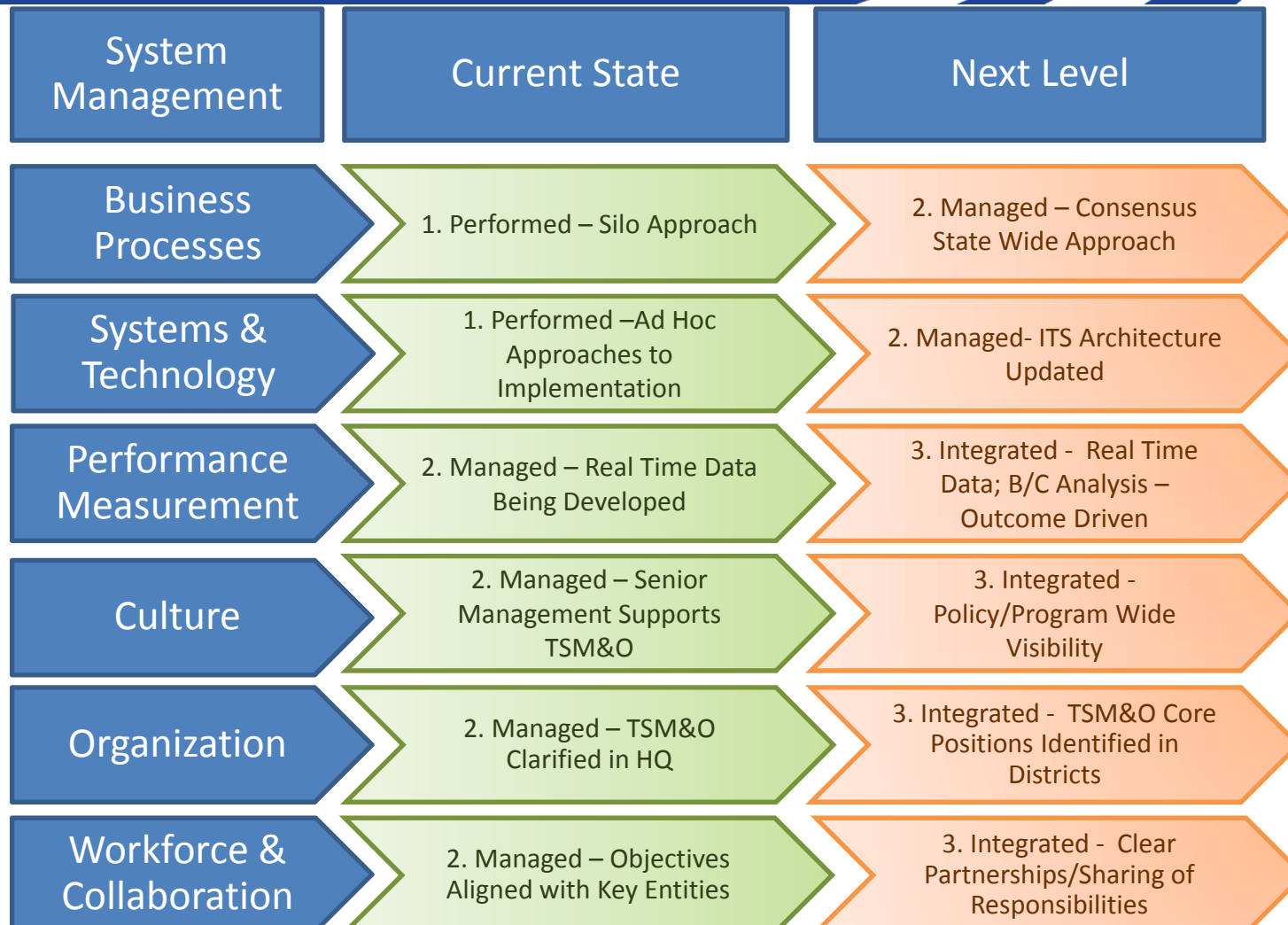Supporting Arterials

Extent of Study Area

L01/L06 Early Adopter Assistance

3-Day Sub-Regional, Corridor Ops/CMM Workshop

- Right amount of time

- Allows partners to focus on a corridor

- CMM self-assessment results in:

  – Baseline - documented

  – Implementation Plan – documented

- A map or guide to TSM&O implementation

Transportation System Management Vision

System Management	Current State	Next Level
Business Processes	1. Performed – Silo Approach	2. Managed – Consensus State Wide Approach
Systems & Technology	1. Performed –Ad Hoc Approaches to Implementation	2. Managed- ITS Architecture Updated
Performance Measurement	2. Managed – Real Time Data Being Developed	3. Integrated - Real Time Data; B/C Analysis – Outcome Driven
Culture	2. Managed – Senior Management Supports TSM&O	3. Integrated - Policy/Program Wide Visibility
Organization	2. Managed – TSM&O Clarified in HQ	3. Integrated - TSM&O Core Positions Identified in Districts
Workforce & Collaboration	2. Managed – Objectives Aligned with Key Entities	3. Integrated - Clear Partnerships/Sharing of Responsibilities

Sub-Regional, Corridor Ops/CMM Workshops

- Statewide

- 3-day Sub-Regional, Corridor Ops/CMM Workshops
  - D12 Irvine – Anaheim Triangle
  - D4 Oakland – East Bay
  - D11 San Diego – April 14
  - D8 San Bernardino – July
  - D3 Marysville/Sacramento – September

SHRP2 Implementation Assistance Program

What are we doing with products from the SHRP2 Implementation Assistance Program?

- Nothing much
  - Just changing the culture of a 121-year old department with over 18,000 employees to integrate system management and operations into its business processes…

Caltrans Contacts

How Do You TSM&O?

Nick Compin, PhD
Caltrans HQ
Statewide Connected
Corridors Pilot Manager
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Assistance Opportunities

Type of assistance	Number available	Amount of assistance
Lead Adopter	4 to 8	$25,000 to $100,000 per opportunity

Who can apply: State DOTs

Offering: Use of the ROF materials and approach to establish/advance TSM&O through workforce development

What might this look like?
Examples

- Shorten and tailor the ROF to the State/agency and create into online training

- Design a short course based on the ROF at a university in the State

- Use the curriculum to establish requirements for TSM&O training for State staff

- Extract key info from the ROF to develop a TSM&O overview module for all technical employees and pilot it

- Important - These are just examples
  - We are looking for your creativity
  - Ideas that can work in your State

Recipient Requirements

- Applicant is a State DOT
  - Can partner with other agencies/organizations, such as universities, MPOs, regional organizations, or other States

- Application shows *meaningful use* of the ROF curriculum, materials, and/or approach

- Project leads to a TSM&O workforce development effort/program that will be ongoing/sustainable

Recipient Requirements (cont.)

- Active leadership and participation in the project by the public agency

- Commitment to work with FHWA and AASHTO and related contractors in advancing the ROF and products resulting from IAP Round 7

- Willingness to share knowledge with other organizations interested in implementing TSM&O workforce development efforts

- Willingness to participate in regional/national knowledge-sharing events to promote the product

Timeline

- ## Product-specific webinars
  - March 8 – March 22, 2016

- ## Round 7 application period
  - April 1– April 29, 2016

- ## Round 7 recipients announced
  - June 2016

For More Information

Product Leads:

Tracy Scriba
Reliability Focus Area
Coordinator/Product Lead
Tracy.scriba@dot.gov

Gummada Murthy
AASHTO Product Lead
gmurthy@AASHTO.org

Additional Resources:

GoSHRP2 Website:	fhwa.dot.gov/GoSHRP2
AASHTO SHRP2 Website:	http://shrp2.transportation.org
GoSHRP2 Alert Sign Up:	fhwa.dot.gov/goshrp2/contact
Email:	GoSHRP2@dot.gov

Download now:

- Copy of this presentation
- Product webinar schedule and registration information
- Links to Round 7 product research recordings (SHRP2 Tuesdays)
- Round 7 assistance opportunities