

WEBINAR

Using the U.S. Domestic Scan Program's Model for
Quick Peer-to-Peer Innovation Transfer

**The U.S. Domestic Scan Program:
The Model and the Tools**

Harry Capers

Arora and Associates, P.C.



Scanning Experience

- Success has been demonstrated by AASHTO, FHWA, and others in technology transfers internationally through activities like NCHRP Project 20-36, “Highway Research and Technology—International Information Sharing.”
- Experiences shows that the “scan” approach is a productive means for encouraging the spread of technology and saves time and money (i.e., SPMTs).
- Similar scan-type activities conducted by various FHWA offices, states and an NCHRP pilot program showed the potential value of a domestic scan program.

Examples of Benefits

- Self-Propelled Modular Transporters (SPMTs)
- Stone Matrix Asphalt
- Bridge Prefabrication
- Design-Build
- Warranties
- Bridge and Earthwork—Rapid Construction
- Roundabouts
- Advanced Composites for Bridges
- Context Sensitive Design
- Lane Control Signals
- Variable Speed Control on Roadways
- Traffic Incident Management
- Winter Maintenance and Operations Practices
- ABC Connection Details
- Bridge Rating of Superloads
- Integrated Corridor Management Maturity Model
- Tunnel Operations and Maintenance
- Motorcycle Safety Strategies
- Knowledge Management Practices
- Strategic Plan recommendations to AASHTO Committees
- Documentation of Successful Practices in Highway Transportation

Scanning

- A type of research
- Peer-on-peer exchange facilitates innovation
- Identifies emerging technologies, best practices and lessons learned on a topic area of common interest to the community

NCHRP 20-68A

U.S. Domestic Scan Program

- Scans are conducted as part of NCHRP Project 20-68A, the U.S. Domestic Scan Program, utilizing a contracted scan management consultant.
- The program was requested by the American Association of State Highway and Transportation Officials (AASHTO), with funding provided through the National Cooperative Highway Research Program (NCHRP).
- Partial support for selected scans may be provided by the U.S. Federal Highway Administration or other agencies.

NCHRP 20-68A

U.S. Domestic Scan Program

- The Program is a multiyear project conducting 3 to 4 scans per year.
- Each scan is selected by AASHTO and the NCHRP 20-68A Project Panel.
- Each scan addresses a single technical topic of broad interest to many state departments of transportation and other agencies.
- The purpose of each scan and of Project 20-68A as a whole is to accelerate beneficial innovation by:
 - Facilitating information sharing and technology exchange among the states and other transportation agencies
 - Identifying actionable items of common interest

Steps in Scanning

- Topics are solicited annually.
- NCHRP Panel selects top problem statements.
- AASHTO and FHWA identify team members.
- Team develops a preliminary list of host agencies.
- Host agency support is arranged by the Scan Management Team.
- Scan is conducted and documented.
- Dissemination and implementation activities are conducted.
- Private Sector Scan Managers organize scan and support team activities.

Types of Scans

- **Traditional Scan: Type 1 Scan** (Team travels to presenters)
 - Outdoor Scan – Visit site to view technology/practice, demos, etc.
 - Indoor Scan – Presentations, Round Table Discussions, Teleconference/Webinar, etc.
- **Reverse Scan: Type 2 Scan** (Bring presenters to team)
 - Typically an Indoor Scan – Presentations, Round Table Discussions, Teleconference/Webinar, Demos, etc.
 - Some change in location may occur
- **Workshop: Type 3 Scan** (Conference format)
 - Involves a well-focused scope
 - Presentations, Panels or Round Table Discussions, Teleconference/Webinar, Interviews, etc.
 - Can be conducted in a shorter timeframe

Post Scan Activities

- Participation in conference calls and web meetings as agreed upon to support dissemination per implementation plan
- Implementation and dissemination of findings and recommendations
- These are important activities as they demonstrate the success of the scan!

Published Scan Reports and Further Information on the NCHRP 20-68A U.S. Domestic Scan Program

- Available at:

- 144.171.11.40/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=1570
- www.domesticscan.org



WEBINAR

Using the U.S. Domestic Scan Program's Model for Quick Peer-to-Peer Innovation Transfer

Case Study: Advances in State DOT Superload Permit Processes and Practices

Matt Farrar

Idaho Department of Transportation



Question from AASHTO:

- “How are superload permitting practices evolving?”
As the size and weights of over legal weight trucks—**superloads**—are ever increasing, there is a definite need to better understand how practices are evolving within the U.S. to achieve enhanced uniformity of effectiveness and ensure public safety in this area.



NCHRP may help to determine the answer

- *NCHRP Report 359: Bridge Rating Practices and Policies for Overweight Vehicles* provided a synthesis of permit rating policies.
- An NCHRP 20-68 U.S. Domestic Scan Program proposed scan would build upon the findings of *NCHRP Report 359*
 - Focus specifically on the topic of superload permitting and compile further detail on recent practices concerning authorization of superload moves within the U.S. and determinations of bridge ratings for such moves.



Scan 12-01: Advances in State DOT Superload Permit Processes and Practices

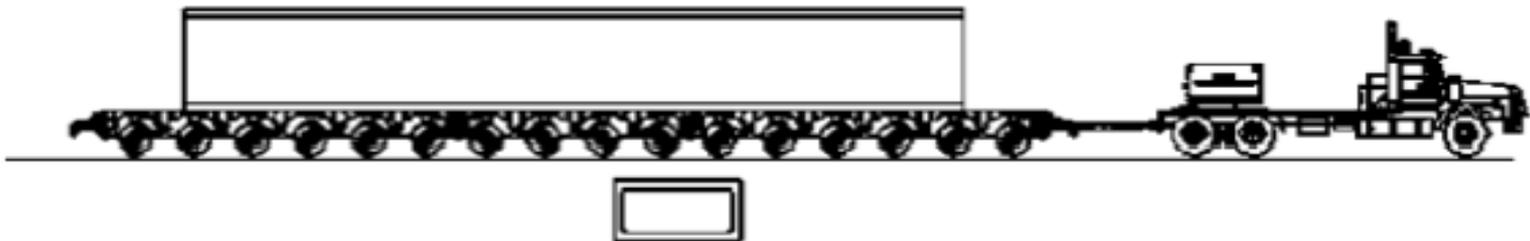
- Scan Topic Selected at December 2011 Oversight Panel Meeting
 - Principal Investigator: Arora and Associates
 - Scan Team consisted of State Bridge Engineers, Load Rating Engineers, Permitting Office Managers, and Subject Matter Expert (report facilitator)
 - Kickoff Meeting for the Scan Team was productive to refine scope of the scan
 - Type 3 Scan (Peer Exchange) was chosen as most effective

Scan 12-01: Advances in State DOT Superload Permit Processes and Practices

- Focus Areas for the Peer Exchange
 - What kind of permit screening or prioritization methods have States developed?
 - Which States have developed successful automated on-line systems for permitting and routing over legal loads?
 - How do States recover costs for permit analysis and review and how are they staffed?
 - Share best practices and brainstorm improvements for the future

Planning and Preparation

- Amplifying Questions developed by Scan Team
- Peer Exchange States Participants Selected
- Outcomes and Deliverables discussed
- Implementation Plan developed



Outcomes

- Type 3 Scan Peer Exchange held December 2013 was well attended and productive
- Principal Investigator and Subject Matter Expert were well organized and great facilitators
- Final report delivered and published
- Implementation plan is underway



Dissemination and Implementation

- Presentations at state and national meetings
- Dialogue and meetings with AASHTO on updating bridge design software (AASHTOWare) to incorporate superloads
 - Next steps are in progress
- Discussions with AASHTO SCOBS technical committees about future needs and research in this area
 - Develop Analysis Guidelines for Load Rating for Superloads
 - Discuss developing a national notional Superload truck configuration in conjunction with industry to encourage harmony across State borders for improved mobility

WEBINAR

Using the U.S. Domestic Scan Program's Model for
Quick Peer-to-Peer Innovation Transfer

Case Study: Institutional Challenges of Implementing Integrated Corridor Management

Kevin Miller
Schneider Electric



Methodology - Overview

1. Desk Scan
2. Recommend Locations and Type of Scan
3. Develop Amplifying Questions
4. Select Sites to Visit
5. Provide Questions to Sites
6. Visit Sites
7. Scan - Initial Findings
8. Scan - Final Report

Scope of Scan

- The Team Examined:
 - What are best practices in integrated corridor management?
 - How are ICM projects and operations funded?
 - What is the operational model for ICM?
 - What are the institutional challenges?
 - How is success defined/ measured?
 - What technologies are used?
 - What ITS Standards were considered?
 - How is the public notified?

Scan Team

Dennis Motiani - AASHTO co-chair

- Assistant Commissioner, Transportation Systems Management
- New Jersey Department of Transportation

Neil C. Spiller - FHWA co-chair (week 1)

- Federal Highway Administration
- U.S. Department of Transportation

Nicholas Compin, Ph.D.

- Branch Chief and Statewide Connected Corridors Project Manager, Division of Traffic Operations
- California Department of Transportation

Anne Reshadi

- Chief, System Operations & Electrical Engineering
- Bureau of Traffic Operations
- Wisconsin Department of Transportation

Brian Umfleet

- Traffic Operations Engineer
- Missouri Department of Transportation

Todd B. Westhuis

- Acting Director, Office of Traffic Safety and Mobility
- Operations Division
- New York State Department of Transportation

Ahmad Sadegh, Ph.D. - Co-SME

- Vice President, Transportation
- Schneider Electric

Kevin T. Miller, Ph.D - Co-SME

- Sr. Program Manager, Transportation
- Schneider Electric

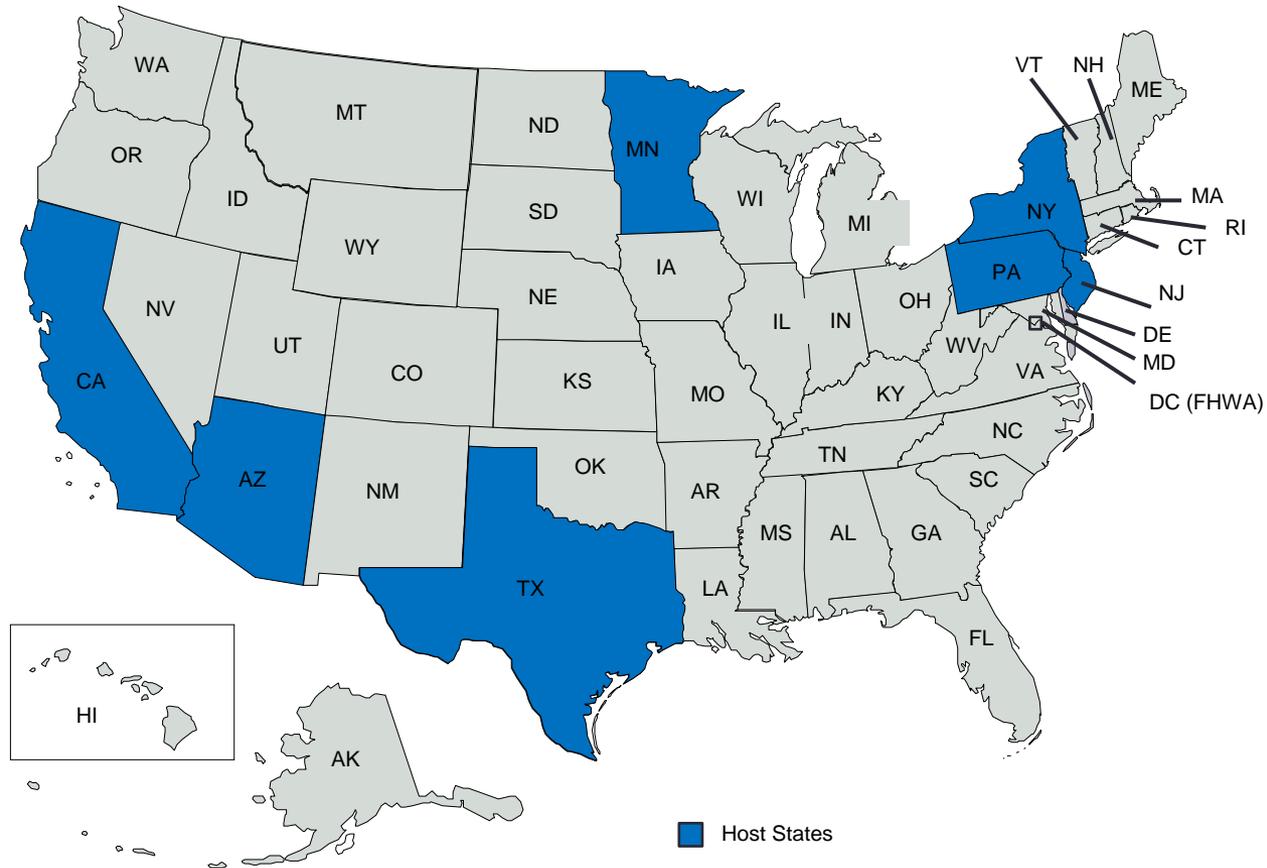
Scan Locations

- Week 1:

- New York/
New Jersey/
Pennsylvania
- Dallas, TX

- Week 2:

- Minneapolis,
MN
- Phoenix, AZ
- San Diego, CA



Amplifying Questions - Key Topics

- Questions provided to Scan Tour locations prior to visits to direct topics of discussion. Key areas:
 - Building Blocks
 - ICM Organization
 - Concept - How (why did you pick your corridor, what is the Vision)
 - Evaluation - Performance Measures
 - Technology
 - Funding
 - Operation
 - Public Awareness

Team Findings

- Scan Team grouped their findings into three main areas
 - Institutional Integration
 - Technical Integration
 - Operational Integration

ICM Focus Areas

Institutional
Integration

- ❖ **Coordination to collaboration** between various agencies, modes, and jurisdictions that transcends institutional boundaries

Operational
Integration

- ❖ **Joint** operational objectives and strategies to manage and balance the total capacity and demand of the corridor

Technical
Integration

- ❖ **Sharing and distribution** of information and system operations control functions to support the analysis and immediate response

Recommendations

- Champion required
- Building Blocks of ICM
 - **Available Capacity** is needed to make ICM effective
 - Must be an **Exchange of Data** and information between agencies responding to an event within the managed corridor
 - **Institutional Cooperation** - There must be a dialogue and agreements among agencies to operate the assets within the corridor in a cooperative fashion
 - **Coordinated Response** - For ICM to function most effectively, all agencies involved with operations of the corridor must coordinate their response to events, including planned events, recurring conditions and non-recurring incidents.
 - **Funding** for initial development and on-going operations needs to be identified.

Implementation Activities

- Industry Outreach
 - Presentations to peers, industry trade shows
- Capability Maturity Model development
 - Develop a CMM assessment tool for ICM focused on:
 - Inter-agency Cooperation
 - Decision Support System
 - Incident Response
 - Data Availability and Fusion
 - Traveler Information
 - Funding

ICM Capability Maturity Model (CMM)

		Level 1 Silo	Level 2 Centralized	Level 3 Partially Integrated	Level 4 Multimodal Integrated	Level 5 Multimodal Optimized
Institutional Integration	Inter-agency Cooperation	Agencies do not coordinate their operations	Some agencies share data, but operate their networks independently	Agencies share data, and some cooperative responses are done	Agencies share data, and implement multimodal incident response plans	Operations are centralized for the corridor with personnel operating the corridor cooperatively
	Funding	Single Agency	MPO tracks funding	Coordinated funding through MPO	Cooperatively fund deployment projects	Cooperatively fund deployment and operations and maintenance of projects
Technical Integration	Traveler Information	Static information on corridor travel modes	Static trip planning with limited real-time alerts	Multimodal trip planning and account based alerts	Location-based, on-journey multimodal information	Location-based, multimodal proactive routing
	Data Fusion	Limited or Manual	Near real-time data for multiple modes	Integrated multi-modal data (one-way)	Integrated multi-modal data (two-way)	Multi-source multi-modal data integrated and fused for operations
Operational Integration	Performance Measures	Some ad-hoc performance measure based on historic data	Periodic performance measures based on historic data	High-level performance measures using real-time data	Detailed performance measures in real-time for one or more modes	Multi-modal performance measures in real-time
	Decision Support System	Manual coordination of response	Pre-agreed incident response plans	Tool selection of pre-agreed plans	Model based selection of pre-agreed plans	Model based creation of incident response plans

WEBINAR

Using the U.S. Domestic Scan Program's Model for
Quick Peer-to-Peer Innovation Transfer

**Dissemination and Implementation
Within and Beyond the Program**

Patrick C. Casey

CTC & Associates LLC



Outline

1. Dedicated support of dissemination and implementation for the U.S. Domestic Scan Program
 - Why and how
 - A few more examples
2. Lessons: Putting it all to work
 - Within the program: Take part
 - Beyond the program: Apply the model

Why Fund Dissemination and Implementation?

Funding for Dissemination and Implementation

- This need was identified by research that tracked implementation outcomes of early scans.
 - Recognized that scan members have the desire but not always the time to sustain activities following a scan.
 - Recommended commitment of resources specifically for **dissemination and implementation**.

The Investment

- NCHRP approved dissemination and implementation support as a funded U.S. Domestic Scan activity beginning in 2012.
 - A dedicated facilitator is contracted to work with each scan team.
 - The facilitator is active with the team before, during, and up to two years after the completion of each scan.

Key Support Activities

- **Dissemination**

- Help identify specific dissemination opportunities and audiences.
- Support dissemination activities and document accomplishments.

- **Implementation (Adoption)**

- Help identify opportunities to apply or demonstrate innovations identified in a scan.
- Support development and assessment of the implementation; document the lessons learned.

Dedicated Time to Plan Dissemination at Full-Day Final Team Meeting

- Participate in team review of findings and development of recommendations.
- Help team develop initial dissemination plan: audiences, dates, key information.
- Discuss team member plans for post-scan implementation activities.
- Plan future team calls and needed materials.
- Plan monitoring and evaluation activities.

Reconvene Team Regularly to Review Efforts and Explore Opportunities

- Monthly webinars to start, then quarterly.
- Review progress on implementation/ dissemination plan activities and discuss new opportunities.
- Assign items for team and facilitator.
- Types of activities, see www.domesticscan.org/implementation.

U.S. Domestic Scan Program

SEARCH FOR:

Search

Scans

ADMINISTRATION & PLANNING

[08-01 STIPS, TIPS, Metro Plans](#)

[08-03 NPDES and Water Quality](#)

[10-01 Risk-Based Forecasts of Land Volatility](#)

[10-02 Rail and Intermodal Access and Parking](#)

[12-04 Transportation Agency Knowledge Management](#)

[13-01 Developing a Cross-Trained Workforce](#)

DESIGN & CONSTRUCTION

[07-02 Accelerated Construction](#)

[08-04 Work Zone Assessment](#)

[09-01 QC/QA of Design Plans](#)

[09-05 Roadway Tunnels](#)

[11-02 Extreme Events and ABC](#)

[12-03 Civil Engineering](#)

Implementation

A central goal of the U.S. Domestic Scan Program is to accelerate the implementation of innovative practices and technologies. Scan team participants take an active role in implementing scan findings in the months—and even years—following each scan.

Scan teams implement findings through a broad array of channels.

Dissemination: Spreading the Word

Among national and international audiences

- Presentations during the TRB annual meeting (including panels and Sunday workshops)
- Presentations at other international, national or regional conferences
- Distribution of scan findings and webinar presentations among state DOT representatives (commonly through AASHTO and TRB committees) and FHWA. Webinars have been hosted nationally (FHWA/NHI) and locally (by scan participant agencies).
- Journal and trade publication articles

Within scan members' own states

- Presentations to DOT executives and state government officials
- Presentations and distribution of scan

Implementing Change

At the national level

- Provide input to national guidelines (FHWA or EPA requirements, AASHTO standards)
- Support federal initiatives (such as Every Day Counts)
- Propose scan technology/practice as an AASHTO Technology Implementation Group focus technology
- Form or advise national working groups
- Propose NCHRP research

At the state level

- Propose changes to state practice or policy
- Conduct training (internally within a DOT or among stakeholders in a state or region)
- Implement scan findings on a trial basis or through pilot programs for evaluation
- Re-visit host states to acquire more detailed information on scan technology or practice...
- ... or bring in a host state expert to accelerate implementation
- Propose state-funded follow-up research

Examples of Post-Scan Activities

- Superload permitting and integrated corridor management already discussed at length
- Additional examples
 - Transit-oriented development
 - Knowledge management

Scan 10-02— Addressing Access and Parking Needs of Non-Resident Users of Rail and Intermodal Transportation Stations



- Scan team held a follow-up peer exchange in 2014 on state DOT collaboration with transit agencies and regional planning organizations.
 - Included states more and less advanced in this area.
 - Discussed successes/challenges, lessons learned, roles of partners.
 - Set individual action plans on future efforts and information exchange.

Scan 12-04—Advances in Transportation Agency Knowledge Management



- Developed a brief PowerPoint for short presentations.
- Preparing a webinar with scan chair and other members.
- Presentation by scan team members for a knowledge management summit.

What can you do with
these tools?

Putting the U.S. Domestic Scan Model to Work

- Review of the key features
 - Face-to-face information sharing and inquiry.
 - Subject matter expert to provide external perspective and collect information on best practices.
 - Assembly of practitioner team dedicated to disseminating findings and implementing results.
 - Commitment of resources to facilitate dissemination and implementation.

One Option: Take Part in the Program

- Propose a scan topic.
 - Annual solicitation through AASHTO.
 - Open to DOT staff, FHWA and AASHTO committees.
- Read about completed and in-progress scans.
 - More than 20 completed to date on virtually every DOT business area.
 - Scan team contacts, final reports, and follow-up presentations, articles and materials.
 - See www.domesticscan.org.
- Tell your management that you're interested in participating on a scan.

Another Option: Borrow from the Program

- Apply and extend appropriate features to any other research and technology program.
 - Face-to-face sharing
 - Subject matter experts
 - Practitioner teams
 - Funded facilitation of dissemination and implementation

Not Sure How to Get Started?

- Opportunities?
- Considerations?
- Pitfalls?

Just ask any of us.

Thank You!

Harry Capers

hcapers@arorapc.com

609-844-1111 x1176

Matt Farrar

matt.farrar@itd.idaho.gov

208-334-8538

Kevin Miller

kevin.miller@schneider-electric.com

313-354-2126

Pat Casey

pat.casey@ctcandassociates.com

608-345-8601