NCHRP Research on Connected Vehicles and Automated Vehicles

Report to the CV Pooled Fund Study

Ray Derr

Dec 3, 2014

Key Projects

- Costs and Benefits of Public-Sector Deployment of Vehicle to Infrastructure Technologies—NCHRP 03-101
- Connected and Automated Vehicle Research Roadmap for AASHTO—NCHRP 20-24(98)
- Impacts of Connected Vehicles and Automated Vehicles on State and Local Transportation Agencies—NCHRP 20-102
- Framework to Support Transportation Agency ITS Infrastructure and ITS Legacy Decisions with Consideration of Connected Vehicle Deployment and Autonomous Vehicle and Automated Vehicle Initiatives—NCHRP 20-07/376

Research Roadmap
NCHRP 20-24(98)

- Objective—develop a CV/AV Research Roadmap addressing the policy, planning, and implementation issues that will face state and local transportation agencies.

- Panel—John Corbin (IA DOT), Mark Kopko (PA DOT), Melissa Lance (VA DOT), Greg Larson (CA DOT), Blaine Leonard (UT DOT), Siva Narla (ITE), Ryan Rice (CO DOT), Shelley Row (consultant), Matt Smith (MI DOT), plus liaisons

Candidate First Year Projects
(#1 of 2)

- Implications of Automation for Motor Vehicle Codes ($500k)
- Business Models to Facilitate Deployment of CV Infrastructure to Support AV Operations ($750k)
- State and Local Policy Actions That Could Facilitate Implementation of CV/AV Systems ($500k)
- Harmonization of State Goals and Regulations ($500k)
- Lessons Learned from Roll-Outs of Other Transportation Technologies ($250k)
- Development of Tools to Predict the Impacts of CV/AV Systems on Highway Operations ($3,000k)

Candidate First Year Projects (#2 of 2)

- CV/AV Applications for State and Local Maintenance Vehicle Fleets ($100k)
- Cybersecurity Implications of CV/AV Technologies on State and Local Operating Agencies ($250k)
- Impacts of Transit System Regulations and Policies on CV/AV Technology Introduction ($150k)
- Critical Next Steps for AV/CV Applications in Long-Haul Freight Operations ($150k)
- Benefit/Cost Analysis of AV Transit Systems Concepts ($500k)

Research Roadmap Budget

Year 1	$3.0 M
Year 2	$4.0 M
Year 3	$4.4 M
Year 4	$2.9 M
Year 5	$1.0 M
Total	**$15.3 M**

Impacts of CV and AV on State and Local Transportation Agencies NCHRP 20-102

The objectives of NCHRP Project 20-102 are to (1) identify critical issues associated with connected vehicles and automated vehicles that state and local transportation agencies and AASHTO will face, (2) conduct research to address those issues, and (3) conduct related technology transfer and information exchange activities. **NOTE: This project is contingent upon SCOR's approval at their Dec 2014 meeting.**

Why Invest NCHRP Funds in CV/AV Now?

- Timely information can help agencies make good decisions in a complex, changing environment.
- While V2V and AV promise great benefits without public costs, infrastructure increases benefits.
- Capital project planning requires a long horizon and technologies are being deployed (e.g., adaptive cruise control, blind spot warning).
- While media have focused on cars, freight and transit are likely early adopters.
- Waiting for public/political demand will reduce an agency's options and the cost effectiveness of those options.

NCHRP 20-102 Panel

Kazem Farhoumand, RI DOT
Shailen Bhatt, DE DOT
Giovanni Circella, Georgia Tech
David Huft, SD DOT
Ed Hutchinson, FL DOT
Sherif Ishak, LSU
Melissa Lance, VA DOT
Greg Larson, CA DOT
Jerry Lutin, Consultant
Siva Narla, ITE
Tom Schaffnit, VII Consortium
Mike Shulman, CAMP

Matt Smith, MI DOT
Paul Trombino, IA DOT
Emil Wolanin, Montgomery County (MD) DOT

Liaisons

Volker Fessmann, FHWA
Gummada Murthy, AASHTO
Jim Wright, AASHTO
Kevin Dopart, U.S. DOT
Anita Kim, Volpe
Mark Norman, TRB

NCHRP 20-102 Panel Responsibilities

- Manage the Research Roadmap

- Solicit and select task-order (IDIQ) contractors

- Monitor research tasks

- Promote timely and effective technology transfer and implementation

Research Roadmap Management

- Jan 15, 2015 Meeting to primarily select the first year's projects
- Regular meetings will be scheduled to adapt the roadmap to conditions
- Recommendations for adaptations will be sought from
  - AASHTO Connected Vehicle Working Group, Leadership Team, and Pooled Fund Study
  - V2I Deployment Coalition
  - U.S. DOT
  - NCHRP 20-102 Contractors
  - TRB Committees

Task Management

- Task panels will
  - Refine scope
  - Review proposals and select contractor
  - Oversee work
  - Review interim and final deliverables
  - Recommend dissemination

NCHRP 20-102 Timeline

Dec 12, 2014—Release RFP for contractors

Jan 15, 2015—Panel refines roadmap and selects projects

Mar 1, 2015—Contractors selected and task proposals solicited

Mar ??, 2015—SCOR decides on the FY 2016 request

Jun 1, 2015—Work underway

Questions for SCOR

- Should NCHRP 20-102 move forward?

- If yes,

  - Any recommendations for improving the proposed process?

  - What oversight mechanisms would you like (e.g., annual report)

NCHRP 20-07/376

- Objective—Develop a framework to support transportation agency ITS infrastructure and ITS legacy decisions with consideration of connected vehicle deployment and autonomous vehicle and automated vehicle initiatives.

- Send recommendations for panel members to rderr@nas.edu.