Connected Vehicle Pooled Fund Study

Program to Support the Development and Deployment of Connected Vehicle Applications

Partnership and Operating Policies

September 2014

Background – A connected vehicles environment holds the potential to support a fundamental advance in surface transportation. While the vehicle component and infrastructure component of the transportation system have traditionally been only loosely coupled (through static signing, vehicle presence detectors, etc.), connected vehicle technology will allow the components to “work” actively together – creating a fully connected vehicles and infrastructure environment. This provides the potential for reduction in congestion, safety improvements, and improved traveler services. In order to realize this potential, a connected vehicles system and environment will require unprecedented collaboration between the private and public sectors, on a scale not required in the current loosely coupled system.

To date, the federal USDOT Connected Vehicle initiative has focused largely on “how” to technically accomplish the integration. A considerable amount of solid technical work has been devoted to developing communications standard (e.g., Dedicated Short Range Communications (DSRC)), developing and deploying field equipment for small-scale prototype/proof-of-concept testing, and high-level conceptual development. As this work has progressed, it has become increasingly clear that there will not be a single way to implement connected vehicle technologies. For example, recent activities in the national program have demonstrated that aftermarket equipment and wireless technologies in addition to DSRC should be considered when exploring deployment of connected vehicles applications.

As owners and operators of the nation’s surface transportation infrastructure, state and local transportation agencies are at the core of the connected vehicle infrastructure. While automakers and device manufacturers will dictate availability of vehicular equipment, transportation agencies will control the deployment and operation of roadside infrastructure and the incorporation of connected vehicle technologies into infrastructure applications (such as traffic signal control). To guide transportation agency involvement in connected vehicle deployments, AASHTO developed a Strategic Plan and Field Infrastructure Footprint Analysis to aid the owners and operators in the nationwide deployment of the connected vehicle infrastructure. It also identified the need for infrastructure providers to conduct research to develop applications that will make full use of the connected vehicle environment.

I. Vision – To support state and local transportation agencies in preparing for the deployment of connected vehicle infrastructure and to provide support for the AASHTO Cooperative Vehicle Strategic Plan and Deployment Planning efforts as well as the USDOT’s Program.

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II. **Mission** – To establish a multi-phase program to facilitate the field demonstration, deployment and evaluation of connected vehicle infrastructure and applications.

III. **Purpose** – To aid transportation agencies in justifying and promoting the large scale deployment of connected vehicle environment and applications through modeling, development, engineering and planning activities.

IV. **Scope** – The Pooled Fund Study will focus on the following:

- Development, deployment and evaluation of connected vehicle applications;
- Support AASHTO’s Strategic and Deployment Plans;
- Support USDOT’s Connected Vehicles Programs and initiatives;
- Document and share deployment best practices; and
- Identify additional requirements within the connected vehicle program to enable the deployment of connected vehicle technology for transportation agencies.

V. **Membership** – The membership will consist of core members, associated members, liaisons and industry experts.

The **Core Members** are the primary stakeholders of the Pooled Fund Study. These are the infrastructure owners and operators. Core members are representatives from federal, state and local transportation agencies who have contributed funding to the study. Each member agency receives one vote and travel reimbursement for one member to attend each in-person meeting. The Core members have the decision making authority for the Pooled Fund Study activities. Core members include the following agencies: Virginia DOT as lead state, CalTrans, FHWA, Florida DOT, Michigan DOT, Minnesota DOT, Maricopa County DOT, New Jersey DOT, New York DOT, Pennsylvania DOT, Texas DOT, Utah DOT, Washington DOT and Wisconsin DOT. Refer to the official Pooled Fund Study website or contact list for membership status, as new members may be added during the study period.

To ensure a thorough perspective, the Core members identified the need to include a wider range of transportation agencies in the discussion, particularly local transportation agencies. A transportation agency can join the study as an **Associated Member** without contributing financially. These members are invited to join meetings and provide input, however, will not be included in official votes or receive travel reimbursements. Those local agency associated members who have parent states as a Core member will work with those states for staying abreast of information gathered through trips. If a locality wishes to formally join, they may do so by making a smaller contribution depending on their budget availability. Associated members include the following DOTs and Road Commissions: Metropolitan Transport Commission, North Texas Toll Authority, Oakland County Road Commission, Palm Beach County, Rijkswaterstaat Center for Transportation & Navigation, and Transport Canada. Refer to the contact list for a complete list as others members may have been added during the study period.
It is imperative that the Pooled Fund Study participants collaborate with other organizations and studies to ensure program consistency. Representatives from these organizations are invited to participate as a **Liaison**. These members are invited to join meetings and provide input, however, will not be included in official votes or receive travel reimbursements. Core members may occasionally identify additional liaisons that should be invited to join to provide additional perspectives to the program. AASHTO and the TRB/National Academy of Sciences NCHRP/SHRP2 Program are current liaisons to the Pooled Fund Study. Refer to the contact list for a complete list as others members may have been added during the study period.

Representatives from various agencies and programs within the **USDOT** (e.g., ITS-JPO, FHWA, and FTA) will be invited to join the Pooled Fund Study to provide input into the program and project selection to ensure their specific program goals are being supported.

**Industry Experts** may be invited to participate in high-level discussions on project selection and direction of the Pooled Fund Study. Once these discussions begin to detail specific projects, the industry experts and their employers must disengage if they wish to compete on project procurement. Core member state universities and research institutions may be given preference over non-member universities and research institutions when evaluating proposals for candidate applications.

**VI. Roles and Responsibilities**

The **PFS Team** is the decision making authority for the Pooled Fund Study and oversees activities of the program. The PFS Team is comprised of Core, Associated and Liaison members. Core members will be the only voting members on the PFS Team. The representative from each Core member organization shall be of sufficient management level in their organization to make decisions regarding the resources of the program. The PFS Team will meet approximately two times per year, typically in conjunction with other events, such as the ITS America Annual Meeting in order to reduce travel costs. Other PFS Team discussions and information exchanges will take place via teleconference and email. The Associated members and Liaisons will have a representative in PFS Team discussions, but will not have voting privileges.

**Project Panels** may be formed to select, guide and advise projects. These committees can be comprised of representatives from the Core members, Associated members, Liaisons, representatives from USDOT, and/or industry experts. The Administrative Team will work with the Project Panels to prepare project statements, project scopes and RFPs. The Project Panels will provide technical guidance and counsel throughout the life of the project. Core, Associated or Liaison members may be part of one or more Project Panel, but there must be at least one Core Member on each Project Panel to serve as the Sponsor. Universities
and research institutions may participate on a Project Panel on a volunteer basis; however, they will not be eligible to bid on the project.

The Administrative Team consists of the lead state, an AASHTO representative, and the University of Virginia Center for Transportation Studies (UVA CTS) through a contract with Virginia DOT to provide technical oversight, procurement and administrative support. In this role, UVA CTS or any other contractor performing administration functions on behalf of the Pooled Fund Study is ineligible to compete and perform work for projects within the Pooled Fund Study.

The Administrative Team will:
- Lead the Pooled Fund Study in identifying and prioritizing project needs;
- Develop project scopes of work;
- Develop and distribute Request for Proposals (RFPs);
- Execute contracts with the selected contractor/researcher;
- Review deliverables;
- Publish and disseminate deliverables;
- Manage budget resources;
- Process travel reimbursements; and
- Coordinate meetings and after actions.

Industry Experts may provide input and guidance to the PFS Team and participate on Project Panels to ensure their program goals and objectives are being met.

VII. Selection of Projects

The Pooled Fund Study focuses on projects that are consistent with, and supportive of, AASHTO’s strategic plan and USDOT’s Intelligent Transportation Systems Joint Program Office strategic plan.
The figure above and the descriptions below illustrate the process by which projects are selected and delivered.

1. The PFS Team will decide on the program direction and the types of projects to be pursued. Project Panels, if needed, will be formed based on this direction. Industry experts may provide input into the discussion; however final decision making authority resides with the PFS Team.

2. The PFS Team members will be asked to submit project ideas to the Administrative Team for consideration. These recommendations should be based on subject matter expertise and member priorities while staying within line of AASHTO’s and USDOT’s Connected Vehicle strategic plans. Each recommendation should include a short project statement to include a problem statement, objective of the project, period of performance and recommended funding.

3. The PFS Team member who nominated a project will present task scopes to the PFS Team for consideration. The PFS Team will discuss and rank all projects and the overall top projects will be pursued. The number of projects will be based on the amount of funding available.

4. The Administrative Team will refine scopes and begin the procurement process. If projects ideas require further research or are small in scope, the PFS Team may task the Administrative Team with those tasks.

5. Project Panels (if determined to be needed) will be responsible for reviewing proposals and providing technical direction to the selected contractor. If the PFS Team determines a Project Panel is not needed due to the size of the scope, the PFS Team will perform the responsibilities of the Project Panel.

6. The Administrative Team will oversee and coordinate projects, manage budgets, administer contracts and handle travel reimbursements. The Administrative Team will also plan and coordinate meetings, provide meeting notes and follow up on action items as needed.

7. During each project selection process, all parties must disclose any potential conflicts of interest. This should occur once projects have been presented to the PFS Team or once contractors have been selected. If a conflict of interest is identified, that party will not be eligible to be involved in the project.

VIII. Conflict of Interest

During each project selection process, all members (voting and non-voting) must complete a form identifying any potential conflicts of interest. It is essential that the work of Pooled Fund Study not be compromised by a conflict of interest or in some circumstances the significant appearance of conflict of interest, on the part of any member of the Pooled Fund Study or anyone associated with the work on the Pooled Fund Study (e.g., consultants, staff). For this purpose the term “conflict of interest” means any financial or other interest which conflicts with the service of an individual because it (1) could impair the individual’s objectivity, or (2) could create an unfair competitive advantage for any person or organization. This Conflict of Interest will be administered on an honor system. Determining a conflict of interest can occur when project statements have been presented to the PFS Team or
once contractors have been selected. If a conflict of interest is identified, that party will be disqualified to be involved in that project development, selection or management. For example,

- Universities/Research Team may determine they wish to bid on a project. If this is identified during the high-level discussions and that party disengages in the project then that party may still bid on the project.
- Members may have a close or financial relationship with one of the contractors bidding on a project. The member can opt out of reviewing specific proposals.
- One member may identify a conflict of interest for another member if they feel it will impact the team or project.

IX. Travel

Since this topic of research is of national importance and requires collaboration among experts from various states, some travel will be involved. All attempts will be made to combine program meetings with other conferences or meetings, so that a maximum pool of program participants can be consulted with minimum travel cost. Travel costs estimated within this proposal cover transportation expenses and per diem. Travel is needed for Core members (paying members) to travel to approximately two meetings per year. These travel expenses will be paid out of the contribution that each state DOT makes to the Pooled Fund Study.

X. Funding Requirements

Virginia DOT agrees to provide $75,000 per year for the program. Other Core members will be asked to contribute at least $50,000 per year. State DOT’s who find that the full $50,000 contribution from their State Planning and Research (SP&R) allocation is not achievable, may join by contributing a “fair share.” Fair shares would be determined based on the percentage of the annual SP&R funds for the state, so that small states are not unfairly burdened.

In addition, in response to project solicitation from other funding organizations such as USDOT, additional funding may be solicited from other sources and Pooled Fund Study members.