Federal Motor Carrier Safety Administration (FMCSA)

EXPANDED COMMERCIAL VEHICLE INFORMATION SYSTEMS AND NETWORKS (CVISN)

SUMMARY REPORT

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Prepared by:

The Johns Hopkins University
Applied Physics Laboratory
11100 Johns Hopkins Road
Laurel, MD 20723-6099

Prepared for:

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Please send comments to:

Valerie B. Barnes
The Johns Hopkins University Applied Physics Laboratory
11100 Johns Hopkins Road
Laurel, MD 20723
Phone: 717-261-0635
E-Mail: Valerie.Barnes@jhuapl.edu

Change Summary

Date	Type	Version
2005-03-04	Initial draft outline; one report for everything	D.0
2005-03-22	Revised to reflect eight separate reports for the high-priority capabilities; added capability report summary, including assessments re Criteria of Success; added notes re the analysis D. McKelvey seeks	D.1
2005-04-13	Revised to include preliminary info from Draft 2 reports	D.2
2005-05-04	Revised to include preliminary info from Draft 3 reports	D.3
2005-06-14	Revised to include information from Baseline V1.0 capability reports; drafted Executive Summary; included internal review comments; updated working group lists; repaired captions; added POR number; updated header	D.4

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Executive Summary

The Expanded CVISN initiative builds on Core CVISN to continue to enhance the safety, security and productivity of commercial vehicle operations and to improve access to and quality of information about commercial vehicle operations for authorized public and private sector users. Through extensive outreach in 2004, the Federal Motor Carrier Safety Administration (FMCSA) engaged stakeholders to identify the capabilities necessary to achieve the goals of Expanded CVISN. FMCSA established a working group in each of four program areas:

- Driver Information Sharing
- Enhanced Safety Information Sharing
- Smart Roadside
- Expanded E-Credentialing.

The working groups met throughout the first several months of 2005 to refine the descriptions of eight high-priority capabilities, two in each of the four program areas. The capabilities include:

- Driver Snapshots
- Safety Data Quality
- Roadside Access to Data
- Access to Credentials Data
- Access to Driver Data
- Carrier Access to Safety Data
- Virtual Roadside Sites
- Better E-Credentialing.

The working groups collaborated to refine the eight high-priority capabilities, propose technical solutions, assess potential costs and benefits, and propose deployment strategies.

In support of the working groups, JHU/APL prepared a report for each capability. Common themes emerged across the capability reports: do what Core CVISN calls for; focus on data quality of shared information; capture lessons learned and best practices; expand/improve data access; improve roadside operations; and maintain communications with stakeholders.

Four items are likely to provide strong, direct support for the CVISN vision: complete Core CVISN nationwide; standardize safety information sharing; establish standards for identification of entities on the road; and share information about drivers either through limited driver snapshots or via a facilitated centralized query to authoritative source systems.

Many of the recommendations developed by the working groups for Expanded CVISN are consistent with ideas developed under other FMCSA initiatives [e.g., Creating Opportunities, Methods, and Processes to Secure Safety (COMPASS) and Comprehensive Safety Analysis (CSA) 2010]. Expanded CVISN working groups should collaborate with the other initiatives' teams to represent CVISN stakeholders' interests.

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1 Introduction

The Commercial Vehicle Information Systems and Networks (CVISN) program was established in the mid-1990s as a means to expedite and coordinate deployment of intelligent transportation systems (ITS) to promote safety, enhance productivity and efficiency, and reduce operating costs in commercial vehicle operations (CVO). States have used federal and other sources of funding to plan CVISN deployment and implement all or part of the core capabilities associated with safety information exchange, interstate credentials administration and roadside electronic screening functions. The Federal Motor Carrier Safety Administration (FMCSA) manages the CVISN program.

In early 2004, FMCSA launched the Expanded CVISN initiative as a follow-on to the Core CVISN program. The goals of the Expanded CVISN initiative are to:

- Enhance the safety, security and productivity of commercial vehicle operations and
- Improve access to and quality of information about commercial drivers, carriers, vehicles, chassis, cargo, inspections, crashes, compliance reviews and citations for authorized public and private sector users.

Figure 1-1 shows how Expanded CVISN builds on the Core CVISN program areas.

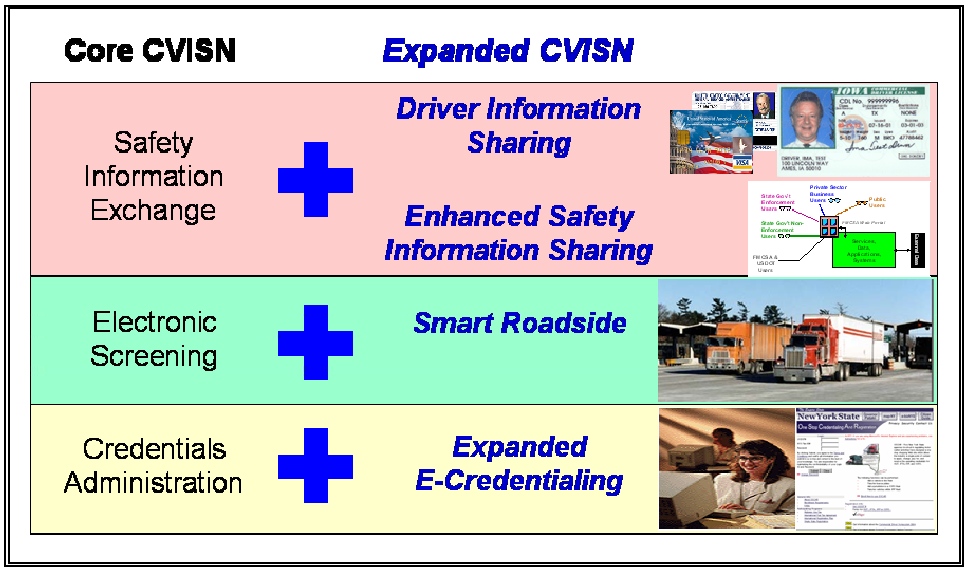

Figure 1-1. Expanded CVISN Builds on Core CVISN

Core CVISN focused on exchanging safety information about motor carriers and commercial vehicles. A component of Expanded CVISN will explore how information about commercial drivers could be shared. Also, Expanded CVISN will examine what additional safety information could be shared among a larger group of authorized stakeholders with a focus on ensuring data quality.

The electronic screening functions that were implemented in Core CVISN will be expanded towards an integrated view of roadside operations with flexible deployment options to enhance the safety, security and productivity of commercial vehicle operations.

The Core CVISN electronic International Registration Plan (IRP) and International Fuel Tax Agreement (IFTA) credentials functions will be expanded to consolidate the process for multiple credentials, include electronic payment options, and improve access to credentials data for authorized users.

FMCSA has brought together state agencies with the appropriate federal agencies, motor carrier industry, and private sector information technology community to define a "menu" of potential additional CVISN capabilities for the Expanded CVISN initiative. Instead of stipulating a fixed set of capabilities that each state should implement for Expanded CVISN, the stakeholder community has adopted a "cafeteria" approach through which each state will deploy those Expanded CVISN capabilities that meet its needs. Each state would be eligible to receive limited federal funding toward deploying Expanded CVISN capabilities. To become eligible for an Expanded CVISN deployment grant, states must first complete Core CVISN deployment and be certified as compliant by FMCSA. Prior to the use of Expanded CVISN funds, a state will be expected to develop a CVISN Project Plan and Design for its Expanded CVISN project.

Several of the Expanded CVISN capabilities cannot be realized without strategies that ensure nationwide compatibility. FMCSA is working with stakeholders to identify two or three of those capabilities for which federal funding and support would provide the necessary foundation for successful Expanded CVISN projects.

1.1 Purpose

This document reports on progress in the Expanded CVISN initiative through June 2005.

1.2 Scope

This interim progress report summarizes what the Expanded CVISN initiative comprises, results of activities to date and near-term future plans.

1.3 Major Activities

Major activities accomplished under the Expanded CVISN initiative from January 2004 through June 2005 were to:

- Define and refine descriptions of potential Expanded CVISN capabilities (January – August 2004)
- Solicit feedback from stakeholder groups on the highest-priority capabilities and identify those requiring federal support (September – December 2004)
- Establish working groups to refine the high-priority capabilities in each program area (January – February 2005)
- Using a working group approach, refine the high-priority capabilities and recommend solutions and deployment options (March – June 2005).

Near-term future activities will be geared towards developing concepts of operations and detailed requirements for two or three capabilities selected by FMCSA for federal support and starting the state grant cycle.

2 2004 Outreach Results: Expanded CVISN Capabilities

During the first several months of 2004, stakeholder groups from ITS America's *Commercial Vehicle and Freight Mobility Forum* (CVFM) and *CVO Committee* identified the next level of CVISN deployment and provided input on potential operational concepts for Expanded CVISN. The CVFM initially recommended that Expanded CVISN capabilities be divided into three program areas: Data Integration, Roadside Operations, and E-Business/E-Government. After reviewing Research and Technology forum reports, CVISN Partnering Session reports, and inputs from the CVFM and CVO Committee, potential capabilities and concepts were developed. For clarity, the capabilities were organized into the four program areas identified in Section 1 of this report. The capability list was presented to the CVFM in September 2004, and feedback was incorporated.

This section of the report lists the visions for each of the four program areas of Expanded CVISN, summarizes each program area, and defines 40 Expanded CVISN capabilities. From October – December 2004, FMCSA held outreach sessions with state and industry stakeholders to solicit feedback on priorities among the total list of capabilities; voting results are also summarized in this section. The high-priority capabilities that emerged from the voting process seeded the next phase of Expanded CVISN, described in Section 3.

2.1 Program Areas: Vision

Vision statements are used to summarize the intended future state of operations across the enterprise and the resultant stakeholder benefits.

2.1.1 Driver Information Sharing

Driver identification is consistent, reliable, and secure. There is no Commercial Driver's License (CDL) fraud. Each licensed driver is qualified to drive the commercial vehicles specified on his/her license, and no driver holds multiple licenses. Drivers' privacy rights are protected without compromising safety. Authorized users (e.g., law enforcement, licensing agencies, potential and current employers) can easily access information about an individual driver. All authorized data users access the same source for the information. Future consideration: Authorized law enforcement personnel know who is driving a vehicle in advance of its arrival at an inspection site, port of entry, or other checkpoint and can more easily assess compliance with regulations.

2.1.2 Enhanced Safety Information Sharing

Safety information is accessible through electronic means by authorized stakeholders. Safety information is exchanged on intrastate and foreign carriers, as well as on interstate carriers. Safety data quality is dramatically improved. Law enforcement officers at all levels in all jurisdictions electronically submit and view inspection, crash and citation reports from the roadside in a timely fashion.

2.1.3 Smart Roadside

Safety, security, effectiveness and productivity of roadside operations are improved through automation and application of proven technologies and processes. Data collected by on-board systems are used to streamline and improve operations and enforcement activities. Enforcement activities are conducted more effectively and frequently. Safe and secure cargo moves efficiently through designated trade corridors. Intrusions and anomalies are detected and reported. Shippers, carriers and customers can predict reliably the transit time for a given shipment and can check on its current status. Enforcement knows which carriers, vehicles, drivers or cargo are high-risk and allocates resources accordingly.

2.1.4 Expanded E-Credentialing

Motor carriers use convenient, fast and accurate electronic methods to apply for, pay for and receive all available e-credentials paperlessly through one portal. Credentialing data is entered only once, by the authoritative originator, and re-used by all systems that need it. Enrollment / application processes share common data elements and are consistent with state and federal e-business practices and rules. Paperless e-credentials are available for all authorized users with near-real-time status, update and data correction capability. CVO information systems support uniform, reliable and complete data exchange standards for all identified credentials. 100% of credentials will only be issued to drivers, vehicles and carriers who are compliant with all applicable regulations and laws and who are not security risks. Consistent performance measures are established to guide implementation of e-credentialing vision related to cost, compliance, and data reliability.

2.2 Master List of Capabilities

This list of capabilities was presented to CVISN stakeholders via T3 (Technical Training by Telephone) in October – December 2004.

2.2.1 Driver Information Sharing Capabilities

Core CVISN introduced the concept of sharing data about carriers and, to a more limited extent, vehicles through the use of “snapshots”. Data about drivers were collected only in association with an inspection. This expansion area suggests broader information sharing concepts for drivers.

D1. Establish, maintain and provide controlled access to driver snapshots/Use and maintain driver snapshots for all processes.

D2. Improve access to driver information for enforcement and carrier personnel to target driver safety risk.

D3. Provide roadside tools to evaluate compliance with hours-of-service regulations.

D4. Improve identity checks in all driver-licensing processes.

D5. Link driver performance data to related carrier ID to identify high-risk carriers.

D6. Determine security rating for drivers.

D7. Provide on-line tools to help carriers assess potential drivers and monitor current drivers' performance.

D8. Ensure that systems control access to driver records.

D9. Allow the driver to review, challenge and correct information in their driving record.

D10. Expand the use of standards for CDLs and information systems that store driver data; include standards for identification security.

D11. Improve the standardization of citation data collection and information sharing among enforcement agencies.

2.2.2 Enhanced Safety Information Sharing Capabilities

Core CVISN introduced the concept of electronically collecting safety data at the roadside by requiring the use of ASPEN (or equivalent) for inspection reporting at all major inspection sites and sharing the ASPEN data via Safety and Fitness Electronic Records (SAFER). Expanded CVISN identifies capabilities to electronically collect and share other types of safety data, including crash data and citation data. The Expanded Safety Information Sharing program area also addresses several motor carrier information access concerns that relate to productivity and efficiency.

S1. Establish data timeliness, data accuracy and integrity measures.

S2. Regularly check data used in CVISN processes for timeliness, accuracy and integrity; purge stale data and repair errors.

S3. Expand core safety systems to include standard information storage and exchange for intrastate and foreign carriers, in addition to interstate carriers.

S4. Establish or expand "data stores" for cargo, carrier, vehicle and driver credential, safety and enforcement data.

S5. Provide on-line tools to enable appropriate users to provide timely information about corrections of deficiencies detected during inspections.

S6. Improve the carrier's ability to review safety data associated with its record. Consider proactively delivering safety data to carrier.

S7. Provide on-line tools for law enforcement to submit crash and citation reports.

S8. Enable jurisdictions to maintain up-to-the-minute inspection history data.

2.2.3 Smart Roadside Capabilities

Core CVISN incorporates the use of 915 MHz Dedicated Short Range Communication (DSRC) readers and transponders for CVO applications (e-screening and interoperability) as well as for electronic toll collection. Carriers and vehicles are registered in multiple systems that enable electronic screening and toll collection operations by transponder ID across jurisdictions and programs. Expanded CVISN capabilities in this area include applying new and emerging technologies to improve roadside operations and improving safety and security monitoring, screening and inspection.

R1. Expand access to data collected by on-board systems to improve roadside operations.

R2. Provide integrated and improved access for roadside personnel to data stored in core infrastructure systems [e.g., SAFER, Motor Carrier Management Information System (MCMIS), CDL data systems].

R3. Provide carriers with streamlined and timely access to citation, crash, and inspection information so they are better informed about safety problems.

R4. Associate high-risk cargo with the container, manifest, chassis, vehicle/transponder, carrier(s), vehicle and driver transporting it.

R5. Expand the use of standard electronic security devices (ESDs) to improve container and trailer security and reduce theft.

R6. Monitor status of the ESDs throughout the trip by collecting "event data" at toll booths, ports of entry, inspection/weigh stations and freight yard entries/exits.

R7. Expand the use of technologies and processes to verify authorized drivers and personnel are able to access the vehicle, trailer and container.

R8. Provide access to the event data and related information to authorized private and public sector users – based on legitimate needs for information to improve productivity, streamline operations and improve security.

R9. Expand the use of mobile data entry devices [e.g., laptop, personal data assistant (PDA), cell phone] and applications to improve data quality and streamline data collection.

R10. Expand the use and capabilities of virtual/remote sites to increase the effectiveness of enforcement.

R11. Expand the use of technology to generate real-time safety and security alerts.

2.2.4 Expanded Electronic Credentialing Capabilities

Core CVISN includes as a goal the electronic submission, payment, processing and issuance of IRP and IFTA credentials. Also included is the e-screening enrollment process. Increasingly, security concerns are leading to a demand for electronic identification, notification, documentation and screening for vehicles, carriers, drivers and critical cargo at ports, borders and other sensitive areas. Expanded credentialing and enrollment processes will become essential to ease the burden of compliance and to accelerate inspection and clearance processes. This program area will explore methods to reduce the complexity of credentialing and enrollment processes, and support the move to electronic exchange of paperless credentials and enrollment information.

C1. Reduce complexity and redundancy for users by offering access to multiple credentials from a single source.

C2. Increase the number of e-credentials that are available [e.g., oversize/overweight (OS/OW) permitting, Hazardous Materials (HazMat)].

C3. Offer a variety of standard e-payment options.

C4. Improve the process for enrolling in multi-jurisdiction programs (e.g., e-screening programs, e-toll) through provision of links.

C5. Provide for automated queries to cross-check supporting requirements across agencies, states and federal systems through use of unique carrier, vehicle, driver and load identifiers.

C6. Legacy credentialing systems update Commercial Vehicle Information Exchange Window (CVIEW) with changes in credentials data for real-time access.

C7. Enhance interfaces and systems for information sharing to provide improved access to more current and accurate credentials information for authorized stakeholders.

C8. Designate one authoritative source for each credential-related data element and provide date/time stamp; manage changes; auditable.

C9. Use secure electronic identification, notification, documentation and screening for vehicles, carriers, drivers and cargo.

C10. Expand the set of standard data elements for information exchange related to credentials.

2.3 High-Priority Capabilities

Some Expanded CVISN capabilities require a nationwide solution. To target the limited federal resources that are expected to be available, from September – December 2004 FMCSA sought stakeholder input to help set priorities. This section summarizes the results of those outreach activities.

FMCSA met with CVISN stakeholders in six outreach sessions. After a brief introduction to the Expanded CVISN initiative, the list of forty capabilities was reviewed with each group. Participants were asked to select the highest priority capabilities in each area.

Voting results were separated into the four program areas and into the categories of stakeholders who participated in the priority-setting process. Figures 2-1 through 2-4 show the voting results. Votes are grouped into these four categories of participating stakeholders:

- Heavy Vehicle Electronic License Plate Program (HELP), Inc., Board (votes are shown in the left bar of Figures 2-1 through 2-4 in blue)
- State CVISN program managers (votes are shown next in yellow)
- Those who attended the Expanded CVISN session at the September 2004 CVFM meeting (shown in turquoise on the figures)
- Motor carrier industry representatives (votes are the last bar, shown in burgundy).

The votes from the four voting groups were normalized so that each group had equal weight. Voting results identified a clear “leader” in each area. Second place was more divided. By combining some capabilities, the list was whittled down to two capabilities in each area. The

eight capabilities described in the following sections emerged as the highest priorities of the CVISN stakeholders who participated in the voting process.

2.3.1 Driver Information Sharing High-Priority Capabilities

Figure 2-1 shows the results of the voting in the Driver Information Sharing area. D1 (Driver Snapshots) received the most votes and was ranked the highest priority in two groups. D2 (Access to Driver Data) received the second highest number of votes and was ranked 1st or 2nd by three groups.

The high-priority capabilities from this area are:

- **Driver Snapshots:** Establish, maintain, and provide controlled access to driver snapshots. Use and maintain driver snapshots in all processes (e.g., enforcement, credentialing, hiring, inspection) that require information about drivers.
- **Access to Driver Data:** Improve enforcement's and carrier's access to driver information to target driver safety risk.

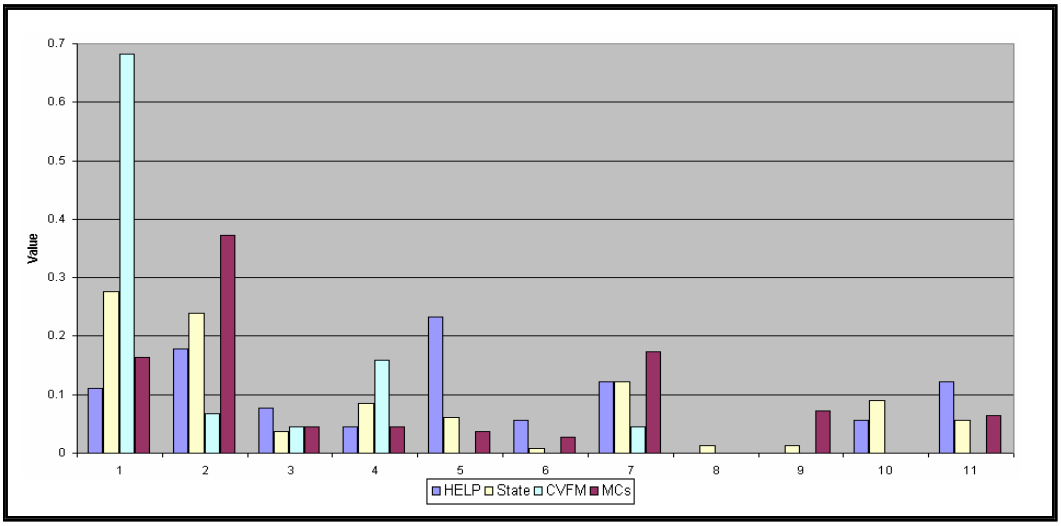

Figure 2-1. Driver Information Sharing Voting Results

2.3.2 Enhanced Safety Information Sharing High-Priority Capabilities

Figure 2-2 shows that S1 (Establish Data Quality Measures) received the most votes and was ranked the highest priority in three groups. S2 (Check Data for Quality, Repair as Needed) and S6 (Improve Carrier's Access to Safety Data) split second place. S1 and S2 were combined to create the "Safety Data Quality" capability. S6 and one of the capabilities from the Smart Roadside area – R3 (Help Carriers Learn about Safety Problems) – were combined to create the "Carrier Access to Safety Data" capability.

The high-priority capabilities from this area are:

- **Safety Data Quality:** Establish data quality measures (timeliness, accuracy and integrity) especially for those data elements used in determining ratings or making decisions. Regularly check data used in CVISN processes for quality; purge stale data; repair errors.
- **Carrier Access to Safety Data:** Improve the carrier's ability to review safety-related data (carrier, vehicle, driver, cargo, crash, citation, inspection) collected by a state or federal agency in a timely manner. Consider proactively delivering safety data to the carrier.

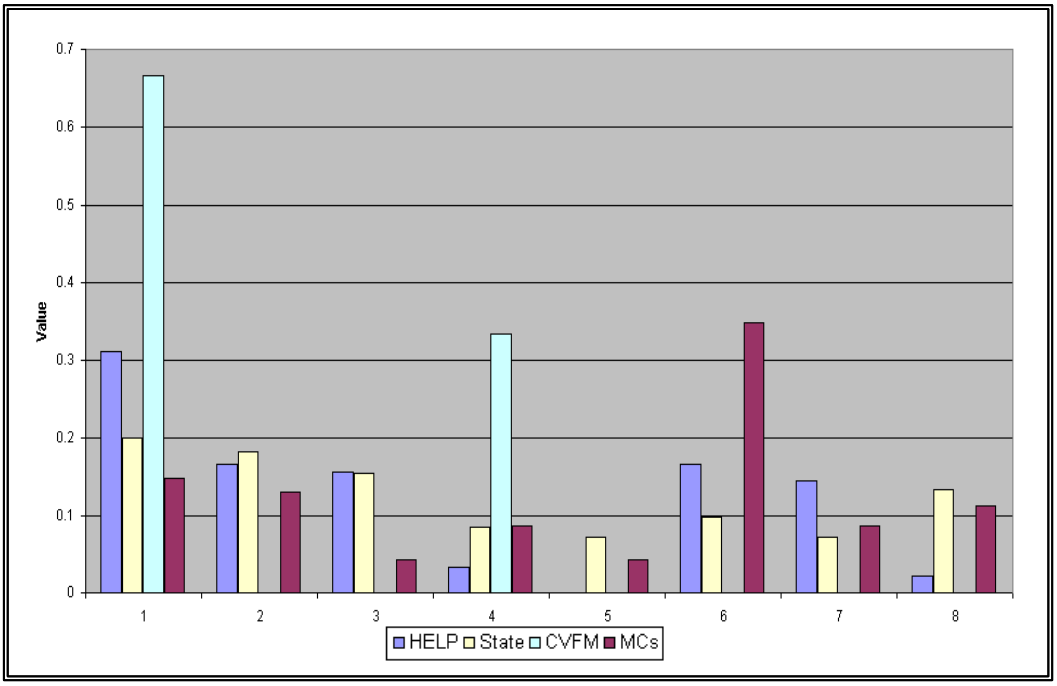

Figure 2-2. Enhanced Safety Information Sharing Voting Results

2.3.3 Smart Roadside High-Priority Capabilities

As mentioned earlier, one of the high-priority items in this area, R3 (Help Carriers Learn about Safety Problems), was combined with S6 in the safety area because they were very similar. That combination is now called the "Carrier Access to Safety Data" capability. Figure 2-3 shows the two second-place finishers: R2 (Roadside Access to Data) and R10 (Virtual/Remote Roadside Sites). Both are on the priority list for the Smart Roadside area.

The high-priority capabilities from this area are:

- **Roadside Access to Data:** Provide integrated and improved access for roadside personnel to data stored in infrastructure systems (e.g., SAFER, MCMIS, CDL data systems).
- **Virtual/Remote Roadside Sites:** Expand the use and capabilities of virtual/remote sites to increase the effectiveness of enforcement.

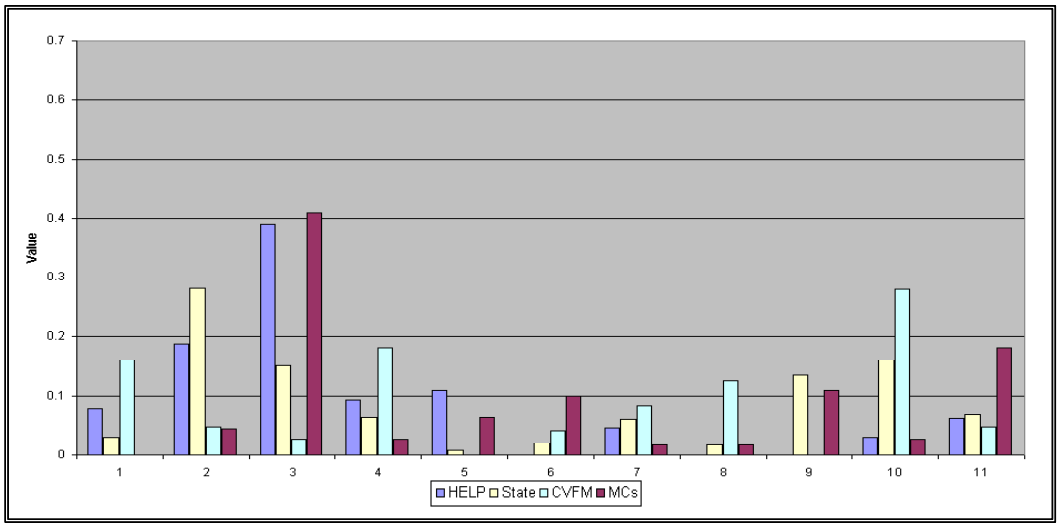

Figure 2-3. Smart Roadside Voting Results

2.3.4 Expanded E-Credentialing High-Priority Capabilities

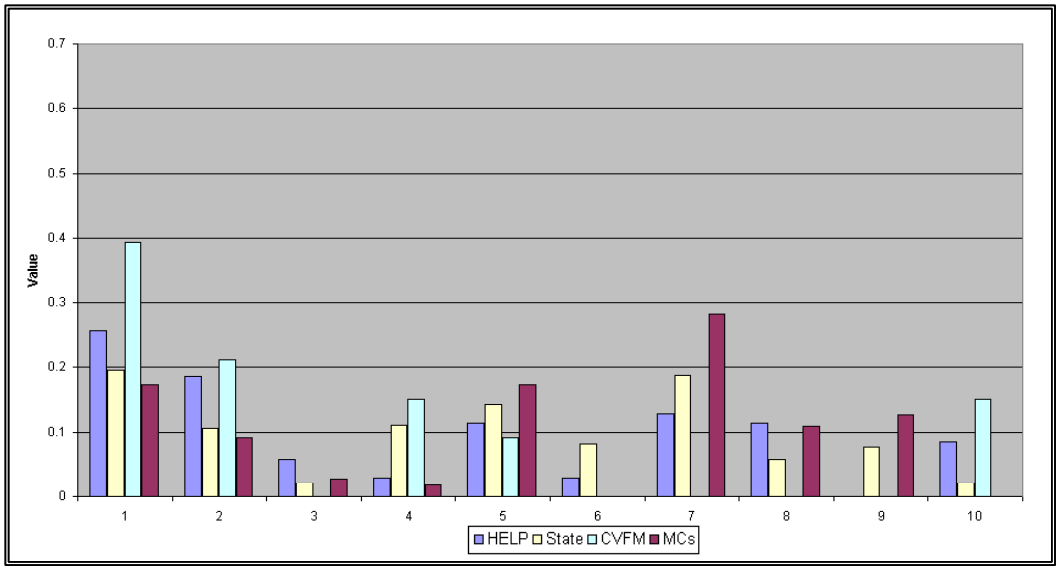

Figure 2-4. Expanded E-Credentialing Voting Results

Figure 2-4 shows that C1 (Reduce E-Credentialing Complexity) received the most votes and was the highest priority in two groups. C2 (Increase Kinds of E-Credentials) and C7 (Improve Access

to Credentials Data) split second place. C1 and C2 were combined to create the "Better E-Credentialing" capability and C7, "Access to Credentials Data", was kept as the second capability in this category.

The high-priority capabilities from this area are:

- **Better E-Credentialing:** Reduce complexity and redundancy for users by offering access to multiple credentials from a single source. Users enter information once instead of multiple times. Increase the kinds of e-credentials that are available (e.g., add OS/OW permitting, HazMat).
- **Access to Credentials Data:** Enhance interfaces and systems for information sharing to provide improved access to more current and accurate credentials information for authorized stakeholders.

3 2005 Expanded CVISN Approach

The capability statements listed in Section 2 were used as input to the next stage of the Expanded CVISN process. At the ITS/CVO Deployment Showcase 2005 in Savannah, GA, in February 2005, FMCSA asked attendees to help decide which of the eight high-priority capabilities should be pursued for further FMCSA investment and what the solutions should look like. As shown in Figure 3-1, the decision process will account for stakeholder priorities, available resources, and the projects already underway or planned. Those factors will be filtered by FMCSA's goals and objectives. FMCSA asked stakeholders to help vet solution ideas and deployment plans so that they invest resources wisely.

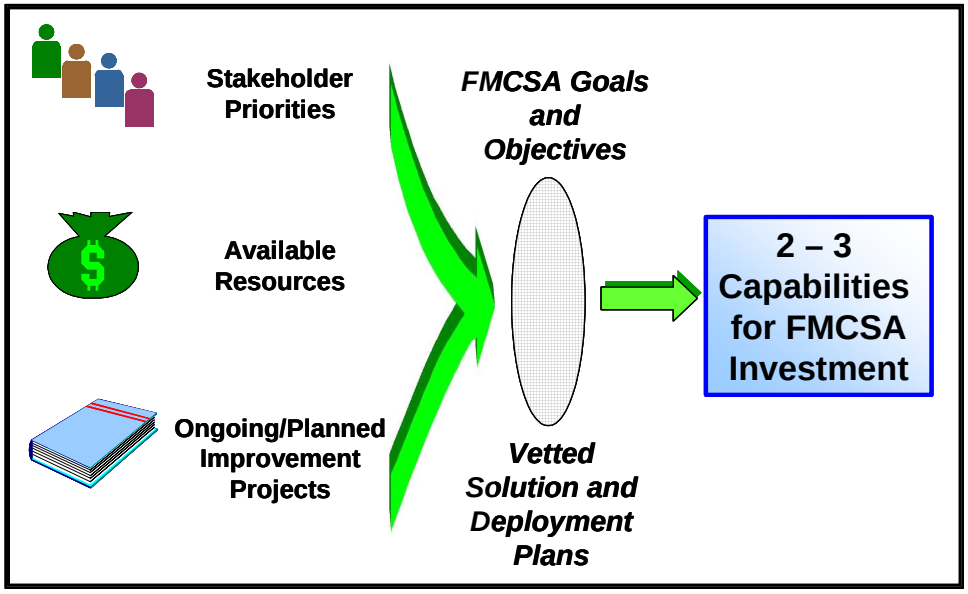

Figure 3-1. Investment Decision Needed to Proceed

Figure 3-2 summarizes FMCSA's four-pronged approach for Expanded CVISN.

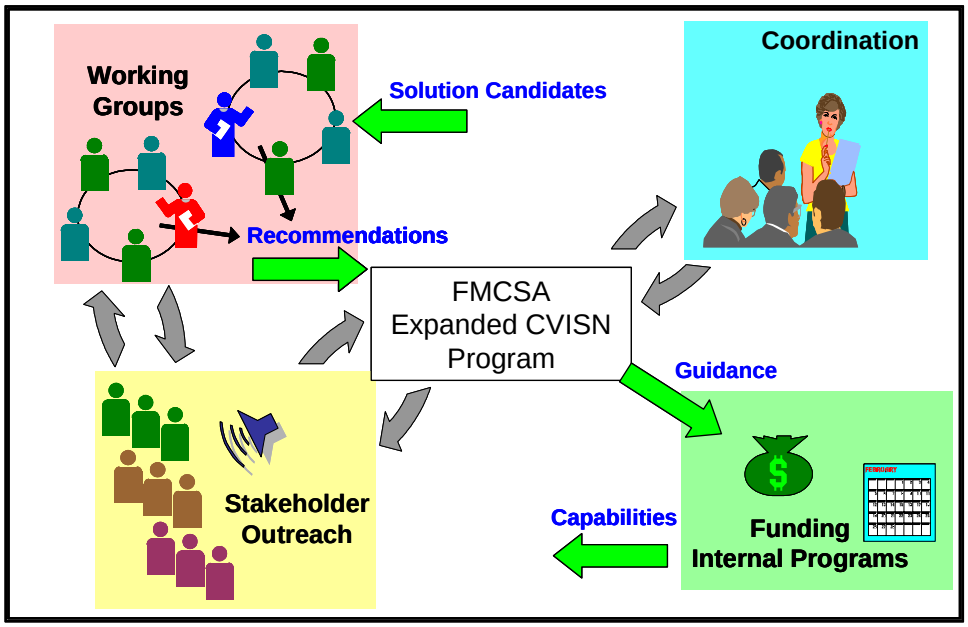

Figure 3-2. Four-Pronged Approach for Expanded CVISN

- Working groups of stakeholders to refine the capabilities and make recommendations to FMCSA
- Coordination with related activities to keep activities in synch
- Funding for internal programs and grants to states
- Continued stakeholder outreach.

FMCSA asked interested stakeholders to support a working group in one of the four program areas. The groups were established at the ITS/CVO Deployment Showcase in February 2005 and met through June 2005 to identify technical solutions and recommend deployment strategies. Each group worked on the two highest-priority capabilities in that area, tackling institutional and technical issues. The working groups were led by co-champions representing state and industry constituencies. Information resulting from the working groups' efforts is presented in separate reports. Please see References 1-8.

In parallel with the working group activities, FMCSA's Expanded CVISN program manager started to coordinate with related efforts and plans, including the internal Creating Opportunities, Methods, and Processes to Secure Safety (COMPASS) initiative, Federal Highway Administration (FHWA), ITS Joint Program Office (JPO) and the Department of Homeland Security. The goals of the coordination effort are to understand how existing plans and activities impact or complement Expanded CVISN priority items, represent stakeholder interests to the FMCSA Chief Information Officer (CIO) team, inform other Department of Transportation (DOT) agencies, and coordinate with non-DOT transportation-related entities [e.g., Transportation Security Administration (TSA)].

FMCSA is also identifying available resources to establish and manage state Expanded CVISN grants and internal programs for selected items.

Continued stakeholder outreach provides ongoing opportunities for stakeholders to: discuss priorities, concerns, problems and progress; identify champions and lead stakeholders; continue and expand private-public partnerships; and tap private-sector expertise to reach best outcomes. Outreach has been and will continue to be accomplished both through the working groups and at meeting venues of opportunity.

4 Capability Report Summary

Approximately 75 people participated in the Expanded CVISN working groups. Appendix A lists those who joined one or more working group teleconferences. The working groups collaborated to

- Refine the eight high-priority capabilities;
- Propose technical solutions;
- Assess potential costs and benefits; and
- Propose deployment strategies.

Each working group prepared two reports, one for each capability. Please see References 1-8. This section summarizes the recommendations that each working group developed and assesses the proposed activities using the common Criteria of Success (please see Reference 9) for measuring success of initiatives.

4.1 Summary of Working Groups' Recommendations

The capability statements shown in the following sections reflect the consensus achieved during the working group process (March – June 2005).

4.1.1 Driver Information Sharing

The two high-priority capabilities investigated by the Driver Information Sharing Working Group were:

- **Driver Snapshots**: Establish, maintain and provide controlled access to driver snapshots. Use and maintain driver snapshots in all processes (e.g., enforcement, credentialing, hiring, inspection) that require information about drivers.
- **Access to Driver Data**: Improve enforcement's and carrier's access to driver information to target driver safety risk.

The Driver Information Sharing Working Group offers these summary recommendations related to the capabilities:

- Sharing driver data is important to improve safety and security. However, privacy concerns must be addressed. Acceptable intended use of the data must be specified and

penalties for misuse defined. The data must be protected. Drivers and other stakeholders must be included in the discussions. The process of defining and designing an approach to improve the sharing of driver information must be open and transparent.

- Development of a "driver safety rating" is critical to improving safety, security and productivity.
- Before embarking on any particular driver information sharing approach, stakeholders should agree on specific data elements, definitions, syntax, format constraints and semantics that explain the intended business use of the data elements for each destination system and user type. The working group could tackle this effort as part of follow-on efforts to this report.
- The working group recommends these solution options for the driver information sharing capabilities:
  - The "Snapshot Light" solution option is recommended to support the Driver Snapshots capability. It builds on Core CVISN capabilities and interfaces and would provide quick information about a driver for roadside screening using the traditional snapshot concept.
  - The "Provide Facilitated Centralized Query" solution option is recommended to support the Access to Driver Data capability. It builds on existing Query Central and Commercial Driver's License Information System (CDLIS) capabilities and interfaces and would provide enhanced information about a driver.
  - The group also discussed briefly the notion of a hybrid solution incorporating elements of the Snapshot Light solution and the Provide Facilitated Centralized Query solution. Those who request driver data via Query Central could be provided not only the current driver license data from the state of record but also the limited driver snapshot proposed in the Snapshot Light solution.
- Three activities related to the driver information sharing capabilities are proposed for near-term funding:
  - **Driver Safety Rating Focus Group**. Recent research should be examined for possible approaches to determining a driver safety rating. The data and results from several studies should be reviewed by a cross-section of stakeholders including drivers, carriers, shippers, enforcement, policy makers and researchers. The focus group should review the analysis results and try to devise a tool that would help with driver roadside screening, driver inspection selection and driver hiring.
  - **Snapshot Light Prototype**. A project should be developed to prototype the Snapshot Light option for the Driver Snapshot capability. The prototype should limit the amount of data shared via snapshots but should include multiple systems at the state and federal levels to assess the feasibility of a broader implementation. The prototype should be coordinated with related efforts to specify data elements, definitions, syntax, format constraints and semantics that explain the intended business use of the data elements for each destination system and user type. Several industry representatives should be involved in the prototype to evaluate the impact on service bureaus, large carriers and smaller carriers. Snapshots for interstate, intrastate and foreign drivers should be included in the prototype. Drivers must be fairly represented

on the project team. The American Association of Motor Vehicle Administrators (AAMVA) has extensive experience in consensus building and information sharing where driver data are concerned and should be part of the project team.

- **Facilitated Centralized Query Prototype**. A project should be developed to prototype the Provide Facilitated Centralized Query option for the Access to Driver Data capability. The prototype should build on the existing Query Central capability to query for driver data via CDLIS and the ongoing prototype for retrieving additional data from inspection and crash reports stored in MCMIS. The prototype should include multiple states and enforcement users to assess the feasibility of a broader implementation. Several industry representatives should be involved in the prototype to evaluate the impact on service bureaus, large carriers, smaller carriers and other stakeholders. Accessing information for interstate, intrastate and foreign drivers should be included in the prototype. Drivers must be fairly represented on the project team. AAMVA has extensive experience in consensus building and information sharing where driver data are concerned and should be part of the project team.

- The working group supports both the Snapshot Light and Provide Facilitated Centralized Query options for sharing driver information and recommends that FMCSA explore hybrids of the two solutions in prototype activities.

4.1.2 Enhanced Safety Information Sharing

The two high-priority capabilities investigated by the Enhanced Safety Information Sharing Working Group were:

- **Safety Data Quality**: Establish data quality measures (timeliness, accuracy and integrity) especially for those data elements used in determining ratings or making decisions. Regularly check data used in CVISN processes for quality; purge stale data; repair errors.
- **Carrier Access to Safety Data**: Improve the carrier's ability to review safety-related data (carrier, vehicle, driver, cargo, crash, citation, inspection) collected by a state or federal agency in a timely manner. Consider proactively delivering safety data to the carrier.

To clarify what was meant by "safety data", the Enhanced Safety Information Sharing Working Group established this definition: Safety data includes all information used to

- Identify a carrier, vehicle, driver, shipper or cargo.
- Evaluate compliance with all commercial motor vehicle regulations.
- Compute safety assessment.

The Enhanced Safety Information Sharing Working Group offers these summary recommendations related to the capabilities:

- Data quality concerns cross all the capability areas and involve a wide array of source systems operated by many agencies and organizations. Data quality improvement should be part of every solution considered in Expanded CVISN.

- The working group recommends these solution options for the enhanced safety information sharing capabilities:
  - The "Standardize Information Sharing" solution option is recommended to support the Safety Data Quality capability. It addresses the inconsistencies, data quality and information sharing problems that have been experienced as part of deploying Core CVISN. The solution includes reviewing lessons learned, aligning business processes, adopting a universal data dictionary and common identifiers, publishing open standards to specify structure and protocols for safety information sharing, and improving constraint checking when information is shared.
  - The "One-stop Shop to Access Safety Data" solution option is recommended for the Carrier Access to Safety Data capability. In this option, carriers would have improved access to data through a single Web portal provided by FMCSA.
  - The "Proactively Notify Carrier about New Data Reports" option is also recommended for the Carrier Access to Safety Data capability. In this approach, for carriers who request it, whenever a new inspection, crash report or driver infraction is reported, the carrier is notified so that he or she may retrieve the data.
- These activities related to the enhanced safety information sharing capabilities are proposed for near-term funding:
  - **Standardize Information Sharing**. Start with a focused effort on a high-priority business process where data quality issues have a high impact. Two teams should be assembled to work together: a business process review team and a technical team. The working group suggests these processes as possible candidates: e-screening enrollment, e-screening bypass, selecting carrier/vehicle/driver for inspection, and selecting carrier for compliance review. The teams would define requirements for new or modified systems and business processes; analyze technical alternatives for implementing the changes; choose alternatives and assign responsibility and resources to implement; implement, test and deploy the chosen alternatives; and measure the resulting improvement in data quality. If the quality improvement objectives are not met, the teams will continue to work on that process before moving to the next highest-priority process. The goal is to align processes, data definitions, information sharing structures and protocols, and data handling so that the CVO carrier, vehicle, driver, shipper and cargo safety information shared nationwide and with international partners is of consistently high quality.
  - **Coordinate with COMPASS on a one-stop shop "carrier portal"** to improve access to safety data. The idea of improving access to safety data for carriers has been a priority for FMCSA. If the COMPASS initiative has near-term plans to develop a Web portal tailored to carrier needs, the ideas presented in the Carrier Access to Safety Data report (see Reference 4) should be shared with the COMPASS team and incorporated, if possible, in any solicitations related to development of a carrier portal.
  - **Evaluate Employer Notification Service (ENS) pilot for additional carrier notification functions**. FMCSA is currently piloting the deployment of a nationwide Employer Notification Service to notify employers of their drivers' convictions and changes of license status in a more timely manner than required by regulation or exercised in practice. The approach should be evaluated for possible expansion to

address additional carrier notification functions including: notification that an inspection has been conducted; notification that a crash has been reported; and notification that a citation has been issued to a driver.

- Efforts to standardize information sharing should be coordinated with related initiatives both within and outside the transportation realm. For instance, FMCSA should explore the Department of Justice's data dictionary program Global Justice XML (eXtensible Markup Language) Data Model. Any effort to standardize information within Expanded CVISN should be coordinated with COMPASS activities.
- Members of the Enhanced Safety Information Sharing Working Group should be invited to participate in these activities. Working group members should be invited to join a stakeholder group that will help steer the COMPASS efforts so that resources can be used effectively and so that the services deployed via COMPASS meet the stakeholders' top-priority concerns.

4.1.3 Smart Roadside

The two high-priority capabilities investigated by the Smart Roadside Working Group were:

- **Roadside Access to Data**: Provide integrated and improved access for roadside personnel to data stored in infrastructure systems (e.g., SAFER, MCMIS, CDL data systems).

  Note: In developing its report, the Smart Roadside Working Group suggested that the capability statement be expanded beyond access to data currently stored in infrastructure systems. The requirements and solution options reflect the notions of improved access to data from the vehicle and data that may not be stored in existing infrastructure systems today.

- **Virtual Roadside Sites**: Expand the deployment, use and capabilities of virtual/remote sites to increase the effectiveness of enforcement.

  Note: The Smart Roadside Working Group decided that "Virtual Roadside Sites" was preferred over "Virtual/Remote Roadside Sites" as the name for this capability.

The Smart Roadside Working Group offers these summary recommendations related to the capabilities:

- Before embarking on improving access to information from the roadside, stakeholders should agree on specific data elements, definitions, syntax, format constraints and semantics that explain the intended business use of the data elements for each destination system and user type. The working group could tackle this effort as part of follow-on efforts to this report.
- Techniques to identify the carrier, driver, vehicle and cargo at mainline speed should be explored further.
- Virtual roadside sites are established for a variety of purposes depending on the priorities and needs of each jurisdiction. FMCSA support is appropriate for the activities listed below.

- The working group recommends these solution options for the smart roadside capabilities:
  - The solution option "Improve Data Available Via Current Systems and Migrate to a Web-based Solution" is recommended for the Roadside Access to Data capability. SAFER was conceived to serve a multitude of purposes, including electronic screening at the roadside. ASPEN supports roadside inspections. To meet this capability's requirements, this option suggests a continuum of improvement that includes these basic steps: enhance SAFER to add to the set of information available through snapshots; enhance ASPEN (or equivalent) to extend its functionality beyond inspections and take advantage of additional data available via snapshots; migrate towards a solution that involves accessing infrastructure data via commercially-available tools (if implemented today, this might involve using Web services to make infrastructure data available to the roadside via Web browsers); use proven sensor and communications technology to enhance roadside activities and access performance and status information electronically from the vehicle or driver.
  - FMCSA should take a leadership role in "Developing and Adopting Identification Standards" to support the Virtual Roadside Sites capability. For virtual roadside sites to accomplish their enforcement and security missions, it must be possible to identify the carrier, vehicle, driver and cargo. In this option, effort would focus on establishing and adopting common identifiers, the means to automatically identify entities at normal speeds, and protocols for vehicle-roadside communications. These standards would also support traditional roadside enforcement.
  - FMCSA should continue to "Research and Test Emerging or Immature Technologies" to support the Virtual Roadside Sites capability. This option focuses on research of technologies that offer promise for improving safety, security and productivity when used at virtual roadside sites. Likely technologies include wireless and wired communications devices and protocols for vehicle-to-roadside and roadside-to-other-site communications; weight and size sensors; chemical, radiation and biological sensors; image capture; automatic identification; on-board system and performance monitors; electronic logs; electronic identification devices; and tools to automatically process and make decisions about the data captured.
  - To support both capabilities, the group recommends a solution option to "Capture Best Practices". This will involve capturing best practices for access to and display of information from the roadside as well as identifying best practices for virtual sites and developing design and deployment templates. States are currently wrestling with many of the same issues, but are analyzing them and seeking solutions independently. While these disparate efforts can lead to creative new solutions, they can also result in states spending much time reinventing the wheel. Under this option, best practices would be collected, lessons learned would be shared, templates and options for design and deployment would be developed for states to tailor, and the information would be made available online for ongoing update and review.
- These activities related to the smart roadside capabilities are proposed for near-term funding:
  - **Best Practices and Lessons Learned**. Many states have investigated methods for accessing infrastructure information and displaying it to roadside personnel to assist

in roadside operations. Several states have prototyped virtual roadside sites. Some of those experiences have been reported in documents easily accessible by other states, but others have not. The working group recommends that a concerted effort be made to collect lessons learned and document best practices for roadside access to data, integrated displays of information to roadside users, other tools to facilitate roadside operations, and for virtual roadside sites. The effort should include identifying existing materials; reviewing those materials and checking with authors for updates; identifying successes that are not yet documented; documenting lessons learned as needed; documenting best practices as needed; and organizing all the material into an on-line compendium of tips, approaches, sample screens, communications approaches and recommended designs for roadside systems. The effort should also include outreach to make the existence of the site known across the stakeholder spectrum and maintenance support to allow for regular updates.

- **Expanded Roadside Information Prototype**. The working group identified information needed at the roadside. Not all the information is currently available in all states. This activity would focus on identifying and defining specific additional data elements; establishing standard structures, formats, meanings, and usage plans for the data; integrating the data with existing roadside tools and displays; and prototyping the enhanced information sharing and usage in a few states at a few sites. This effort should be coordinated with related activities recommended by the Driver Information Sharing and Expanded E-Credentialing Working Groups. Different methods for sharing and using the data may be explored if suggested by the best practices activity described earlier.
- **Roadside Web-Based Tools Prototype**. Building on the first two activities, this activity moves the notion of enhancing roadside functions forward by reviewing all roadside activities performed by both mobile and fixed units and by prototyping integrated Web-based tools to support those personnel. Both the front-end user interfaces and the back-end data management systems should be evaluated as part of this effort. The goal is to move towards an end state in which there is a single sign-on to support all roadside activities, to provide role-based access to all data needed by those activities, and to submit reports from the roadside. Instead of having multiple applications locally, users would access on-line tools. This effort should be coordinated with the COMPASS initiative.
- **Standards for Identification**. This activity addresses standard means for identifying the carrier, vehicle, driver and cargo on the road. This effort should build on the best practices activity described above and focus on the most promising approaches. The goal is to move quickly towards standards that can be used in the near term, while keeping in mind longer-term solutions that are consistent with other broader programs [e.g., Smart Box, Vehicle Infrastructure Integration (VII)]. This effort will support both virtual roadside sites and traditional roadside enforcement.
- **Ongoing Technology Research and Test**. As part of this activity, FMCSA would continue to support research of technologies that offer promise for improving safety, security and productivity when used at virtual roadside sites. Initial research and testing might focus on emerging technologies proposed in the best practices and identification standards activities. The research and test team should work with stakeholders from within the CVO community to participate in the process and

coordinate activities with other researchers supported by states, industry associations, US DOT and the Department of Homeland Security who are investigating similar technologies for transportation operations.

4.1.4 Expanded E-Credentialing

The two high-priority capabilities investigated by the Expanded E-Credentialing Working Group were:

- **Better E-Credentialing**: Reduce complexity and redundancy for users by offering access to multiple credentials from a single source. Users enter information once instead of multiple times. Increase the kinds of e-credentials that are available (e.g., add OS/OW permitting, HazMat).
- **Access to Credentials Data**: Enhance interfaces and systems for information sharing to provide improved access to more current and accurate credentials information for authorized stakeholders.

The Expanded E-Credentialing Working Group offers these summary recommendations related to the capabilities:

- There are a number of items originally listed as Expanded CVISN in e-credentialing that are, in fact, prerequisites for successful e-credentialing and, therefore, are not part of Expanded CVISN. For CVISN to achieve the original core capabilities, these issues must be successfully addressed.
  - FMCSA must take the lead in coordinating with the entities charged with IRP and IFTA registration and permitting to enable near real-time availability of data. Absent the availability of current data across the country, the use of these data in any screening operation will be counterproductive.
  - A single and unique number must be assigned to every carrier, and this must be a required field for all credentials. If this is to be the US Department of Transportation (USDOT) number, then the database of these numbers must be thoroughly cleansed to eliminate any multiple entries for single carriers.
  - A number of states will never succeed in deploying Core CVISN if they aren't provided the technical support needed to successfully implement CVISN-compliant e-credentialing. FMCSA should establish a technical support team, either internally or through vendors with access to various technologies, that could be made available to states requiring this assistance.
  - States must be encouraged to fill the credentials-related fields in SAFER snapshots to enable credentials data sharing across jurisdictions.
  - States need to share Single State Registration System (SSRS) information. Consideration should be given to sharing SSRS (or its replacement) data via SAFER.
- The working group is concerned that the approach being taken by Expanded CVISN may not meet the needs of a changing environment. While the different working groups may be able to focus on a few key issues that exist today, these may not be the issues of highest priority a year from now or at any point in the future. As such, the Expanded E-

Credentialing Working Group recommends that some portion of available funds be set aside to address emerging issues. They further recommend that either this working group or some similarly constructed group of representatives of CVISN-affected entities be reconstituted annually to review issues and develop priorities for e-credentialing.

- The working group recommends these solution options for the expanded e-credentialing capabilities:
  - The "Gather Best Practices and Share Lessons Learned" solution option is recommended to support the Better E-Credentialing capability. There is high potential value from researching best practices and developing federal guidance related to "model" system characteristics – for example, portability, authentication processes, enterprise solutions, automated system-to-system queries to accomplish verifications that are currently conducted manually, information sharing among e-credentialing systems to minimize requirements for duplicate information across credential types, etc. Under this option, best practices would be collected, lessons learned would be shared, and the information would be made available online for ongoing update and review.
  - The "Explore Electronic Payment Mechanisms" solution option is also recommended to support the Better E-Credentialing capability. State and federal government agencies have used a variety of mechanisms for electronic payment. Fees are charged for some e-payment options (e.g., credit card), and those fees may deter states or customers. Under this option, experts would explore possible roles for the federal government to provide/support electronic payment mechanisms related to states' e-credentialing efforts. FMCSA could act as a convener to bring interested parties and experts together.
  - The "Develop Benefit-Cost Framework" solution option is also recommended to support the Better E-Credentialing capability. To garner funds for implementing e-credentialing, state agencies often must estimate and explain the benefits that will be realized and the costs that will be incurred. Under this option, effort would focus on developing a framework to support the funding request process.
  - The "Provide On-line Access to Heavy Vehicle Use Tax (HVUT) Payment Status" solution option is recommended to support the Access to Credentials Data capability. As a condition of receiving federal highway funding, states are required to verify payment of HVUT prior to issuing an IRP credential. This has been problematic for electronic credentialing processes. Under this option, FMCSA would work with the Internal Revenue Service (IRS) and states to provide on-line access to HVUT payment status, preferably via SAFER.
  - The "Make SAFER Provide Better Access to Credentials Data" solution option is recommended to support the Access to Credentials Data capability. To meet this capability's requirements, this option focuses on enhancing SAFER. Specific credentials data required by office, roadside and carrier personnel would be added to the carrier, vehicle and driver snapshots as needed. Subscription criteria and fulfillment processes would be re-evaluated to streamline the process of maintaining credentials data in the snapshots. Query/response mechanisms would be modified to allow real-time queries from users and systems via SAFER to

authoritative sources of record. SAFER users would access all services through a single sign-on.

- These activities related to the expanded e-credentialing capabilities are proposed for near-term funding:
  - **Best Practices and Lessons Learned**. Several states have implemented e-credentialing. Some of those experiences have been reported in documents easily accessible by other states, but others have not. The working group recommends that a concerted effort be made to collect lessons learned and document best practices for e-credentialing. The effort should include identifying existing reports; reviewing those reports and checking with authors for updates; identifying successes that are not yet documented; documenting lessons learned as needed; documenting best practices as needed; and organizing all the material into an on-line compendium of tips, approaches and recommended designs for e-credentialing. The effort should also include outreach to make the existence of the site known across the stakeholder spectrum and maintenance support to allow for regular updates. This effort should be the first step in an ongoing low-cost project to continue a dialog about e-credentialing and make resources available to states that need assistance.
  - **E-Payment Mechanisms**. As part of this activity, FMCSA would support research of e-payment mechanisms in relation to e-credentialing. Initial research and testing might focus on successful approaches proposed in the best practices activities. The research and test team should work with stakeholders from within the CVO community to participate in the process and coordinate activities with other researchers supported by states, industry associations and other branches of the Federal Government who are investigating similar questions for other e-commerce operations.
  - **Benefit-Cost Framework**. A task force should be established to develop a benefit-cost framework that can be used to evaluate, estimate and explain the benefits that will be realized and the costs that will be incurred when e-credentialing is deployed. The framework would be used by those who seek funding and legislation to support e-credentialing activities. The relationships among safety, security, productivity and credentialing should be part of the framework.
  - **On-line Access to HVUT Payment Status**. A task force should be established to work with the IRS to define the requirements and approach for providing on-line access from state commercial vehicle registration offices to HVUT payment status. The working group suggests that it would be most efficient for the states to build upon the SAFER model and retrieve HVUT payment status via SAFER snapshots or a query to SAFER. Once the requirements and approach have been agreed upon, a prototype should be planned to test the approach on a small scale.
  - **SAFER Access for Credentials Data.** SAFER today has fields for some credentials data, and one of the earlier recommendations is to encourage jurisdictions to routinely fill those snapshot data fields. The requirements for accessing credentials data go beyond the existing SAFER capabilities in two ways: additional data and real-time access to information from the authoritative sources. For this activity, a single state or small group of states would work with the SAFER team to extend the SAFER snapshots to hold additional credentials fields and allow real-time queries from users

and systems via SAFER to authoritative sources of record for credentials data. The prototype team should consider implementing a small-scale solution that can be expanded or serve as a model for national deployment.

- The working group is also concerned about the apparent intent of FMCSA to concentrate available funds on two or three projects for development. It is their opinion that the activities needed to ensure that CVISN e-credentialing is successful require leadership and/or a commitment of administrative and technical support resources by FMCSA to achieve, and that the activities will not require a significant expenditure of Expanded CVISN resources. Therefore, the group urges FMCSA not to limit the number of Expanded CVISN initiatives to be undertaken.

4.2 Proposed Activities Assessment

The proposed activities can be assessed using the Criteria of Success (COS) (Reference 9) used by the ITS JPO for measuring the success of initiatives.

Evidence on Problem-ITS Match
The working groups proposed activities to advance the objectives of the Expanded CVISN initiative. The activities were selected to make significant progress on one or more Expanded CVISN high-priority capabilities. The activities support the recommended solution options. In each report, the group identified the expected benefits associated with the recommended solution option. The activity descriptions characterize those who should participate in the activity, including FMCSA's "customers". The main customers are state personnel, carriers and/or drivers. There is a strong match between each proposed activity and the goals of the ITS program.

Acceptable Approach
The recommended solution options are generally consistent with the National ITS Architecture and the CVISN Architecture. The architectures should be evaluated to see if the details of new/additional information sharing and functionality associated with Expanded CVISN capabilities necessitate architecture updates. The proposed activities include standard system engineering steps associated with sharing additional information. Privacy, data ownership and security matters are included in the requirements, issues and recommended solutions. Institutional and technical issues have been identified and the proposed activities are designed to address them. Anticipated cost and schedule information provided is inadequate and elevates the risk associated with each activity.

Stakeholder Acceptance
Stakeholders developed the recommended solutions and defined the proposed activities. The purpose for each activity has been defined. In some cases, the broad steps for stakeholder involvement in the activity have been defined. In others, the steps should be more clearly spelled out. Each working group proposed some follow-on involvement of group members. This provides stakeholder groups interested in the activities. Industry was poorly represented in all working groups, despite several attempts to engage them. To reduce risk, industry representatives (carriers, carrier associations, drivers, service bureaus, technology vendors) should be added to the teams that will support the selected activities.

Field Evidence of Initiative Impacts
For each initiative involving field deployment that is planned under the Expanded CVISN program, measures of effectiveness must be identified and data collected to evaluate the impact of the initiative. If changes are being made to operational systems or if new systems are provided, formal testing should be part of the deployment and evaluation process. Data to evaluate the initiative's impact should be acquired from all affected stakeholders, including federal, state and industry partners.

5 Observations and Recommendations

This section presents observations and recommendations about the Expanded CVISN capabilities and the proposed activities.

5.1 Cross-Cutting Themes

Several cross-cutting themes emerged from the working groups' efforts:

- Do what Core CVISN calls for;
- Focus on data quality of shared information;
- Capture lessons learned and best practices;
- Expand/improve data access;
- Improve roadside operations; and
- Maintain communications with stakeholders.

5.1.1 Do What Core CVISN Calls For

Observation: The working groups pointed out that there were a few items originally listed as Expanded CVISN capabilities that are, in fact, directly related to Core CVISN capabilities and should not be considered part of Expanded CVISN. For CVISN to achieve the original core capabilities, these issues must be successfully addressed. The working groups identified several specific examples. Snapshots are not fully populated; in particular, state credentials data are often missing. This means that snapshots are not as effective as they could be, and snapshots are used in fewer processes and states than they could be. It is difficult to match data from different sources because the common identifiers recommended early on in CVISN have not been universally adopted. Additionally, some carriers are assigned more than one USDOT number. Related data problems proliferate and are difficult to resolve. Electronic screening participation continues to be hampered by lack of interoperability in sharing transponder identifiers across the major screening programs. Some states have not been able to fully implement Core CVISN because they lack the financial and/or technical resources to do so. When those states are able to complete Core CVISN, other states will benefit as well because state-provided information will be more complete.

Recommendation: FMCSA should help states complete Core CVISN by providing continued leadership on difficult institutional issues and by providing technical support. States should be encouraged to complete Core CVISN, including accurate, complete and timely sharing of safety and credentials information as originally conceived.

5.1.2 Focus on Data Quality of Shared Information

Observation: Discussions about several capabilities included comments about data quality issues. The working groups identified specific examples of quality issues including multiple USDOT numbers for one carrier, crash reports assigned to the wrong carrier, and different information for a driver depending on whether the data were retrieved from a state or a service bureau. Support was strong for adopting common identifiers and a universal data dictionary (with common semantics and syntax) for data elements that are shared across jurisdictions and/or agencies. Members recommended establishing open standards for data structures and protocols to share data. Support was also strong for establishing and implementing "constraint checking" standards for what data should be rejected or accepted. Participants recognize the difficulties associated with achieving these information-sharing standards, but believe that achieving significant data quality improvements cannot be accomplished without them.

Recommendation: The COMPASS initiative is addressing data quality issues. Please see Appendix B for areas where proposed Expanded CVISN activities may overlap with COMPASS. Expanded CVISN working group representatives should consult/join the COMPASS team to ensure that solutions are broad-based and coordinated. FMCSA and FHWA should investigate partnering with the Department of Justice (DOJ) and the Department of Homeland Security in their exploration of the development of a Global XML Core Data Model that builds on DOJ's data dictionary program, Global Justice XML Data Model. The existing standards/conventions used in CVISN (e.g., XML for SAFER) should be evaluated and leveraged for future expansion. FMCSA should continue to assist states in cleansing data errors in various information management systems.

5.1.3 Capture Lessons Learned and Best Practices

Observation: States that have deployed Core CVISN capabilities have learned many lessons along the way, some documented, many not. Efforts outside CVISN have experimented with many of the same concepts and solution alternatives that CVISN teams are or will be wrestling with. Every working group discussed the idea of building on past successes and lamented, to some degree, the paucity of easily accessible lessons learned and best practices documents.

Recommendation: With limited resources available at the federal and state levels, a modest investment should be made to capture lessons learned and best practices relevant to CVISN capabilities and concepts so that all may benefit from the knowledge already gained. Roadside and office processes, systems and technologies should be reviewed. The effort should include volunteers from the working groups and should draw in other experts as well. This effort should culminate in a compendium of knowledge including sample approaches, displays, recommended designs and sample procurement-related documents. Materials should be posted on an existing Web site for easy retrieval and re-use. Future awards of FMCSA funds should include a commitment to providing material to keep the knowledge base up to date.

5.1.4 Expand/Improve Data Access

Observation: The working groups recommended expanding existing systems to improve access to information and to share additional information. The focus for improving data access was on roadside operations and carriers. For instance, the groups proposed that SAFER be expanded to share limited driver snapshots and more credentials information. The groups also proposed

expanding the systems that Query Central can access. This would build on the existing CVISN architecture and interfaces, a benefit to those states that have already implemented the core functions. One shortcoming with the existing SAFER approach is that the data may be stale if the state has not provided updates in a timely fashion. This discourages enforcement from using the snapshots because they require up-to-date information before issuing a citation. The working groups suggested that SAFER be enhanced to allow real-time reach-back to authoritative source systems in response to a user query. The working groups also suggested mechanisms to provide carriers with better and more timely access to information about drivers and themselves.

Recommendation: Ongoing FMCSA projects (e.g., COMPASS, CSA 2010) are addressing some of the same capability goals. Please see Appendix B for areas where proposed Expanded CVISN activities may overlap with other FMCSA initiatives. Requirements and suggested solutions related to expanding and improving data access that emerged from the working groups' reports should be reviewed as a whole with representatives from ongoing projects so that an effective enterprise-wide approach can be followed. Representatives from the working groups should be invited to participate as advisors or members of steering committees for related projects.

5.1.5 Improve Roadside Operations

Observation: Several recommendations were geared towards improving operations at the roadside. For example, the groups suggested activities to make it possible to identify entities on the road, use technology to help identify high-risk entities on the road, access more and better infrastructure information more easily and efficiently from the roadside to enable data-driven enforcement practices, link the entity on the road to the infrastructure information, and make it easier for roadside officers to fill out and submit reports. The working groups identified areas where FMCSA leadership is important to achieve real progress.

Recommendation: Tools that support roadside operations should be consolidated and upgraded. The COMPASS initiative may be addressing many of the suggested improvements. States lack the resources to do extensive research into emerging technologies that could improve roadside operations. Federal leadership and support is needed. Standardizing the identification of entities on the road requires a national solution and strong federal leadership.

5.1.6 Maintain Communications with Stakeholders

Observation: The working groups were very effective at focusing on a few key problems and proposing solutions. Industry involvement was extremely limited, despite repeated attempts by several working group members to invite participation from various industry stakeholders. Priorities change for each state as they deploy ITS capabilities, work with their own stakeholders, and encounter new situations and environments.

Recommendation: The forward, problem-solving and open communications momentum achieved by the working groups should be encouraged and continued. This will provide a forum for engaging stakeholders, periodically evaluating priorities, defining detailed requirements, reviewing proposed operational scenarios, and assessing design alternatives. There are experts among the working group members who can help others who need assistance and advise ongoing

and new projects. Government agencies should continue to use stakeholder input to help guide the allocation of resources.

5.2 Capabilities that Support the CVISN Vision

The original vision of CVISN was:

> A fully integrated set of motor carrier information systems supports safe and seamless commercial transportation throughout North America. These systems provide high quality, timely, and easily accessible information to authorized users.

Observation: Of the many recommendations and activities proposed in the capability reports, a few items seem to provide especially strong support for that vision:

- Do What CVISN Calls For
- Safety Data Quality: Standardize Information Sharing
- Virtual Roadside Sites: Standards for Identification
- Driver Information Sharing: Either Snapshot Light or Facilitated Centralized Query

Several low-cost, high-impact items were identified to complete Core CVISN: ensure a single, unique USDOT number is assigned to a carrier and resolve existing problems; provide a technical support team to help states complete Core CVISN; encourage states to fill SAFER snapshots with credentials data; and coordinate with IRP and IFTA registration agents to improve access to current IRP and IFTA data. Standards for safety information sharing are needed to enable all that CVISN set out to do. Standards for identification of entities on the road are needed to enable effective roadside operations. To extend CVISN beyond its original focus but stay within the vision, sharing driver information would enable more effective enforcement, hiring of safer drivers, and getting poor drivers off the road – all of which will improve safety and productivity.

Recommendation: In evaluating the working groups' reports, decision-makers should consider the extent to which the recommendations and proposed activities directly support the CVISN vision.

5.3 Coordination with Other Initiatives

Observation: Many of the working groups' recommendations and proposed activities are synergistic with other ongoing or planned initiatives. The other initiatives do not always have strong connections to external stakeholder groups to help define requirements and operational concepts and to assess design alternatives.

Recommendation: Establish formal connections between the Expanded CVISN Working Groups and other initiatives so that CVISN stakeholders' interests can be well represented to the other initiatives. Continue to coordinate Expanded CVISN activities with other initiatives to

avoid duplication of effort and ensure enterprise-wide solutions that satisfy all stakeholders' needs.

6 References

1. JHU/APL, *Expanded CVISN Driver Information Sharing Capability Report: Driver Snapshots*, SSD-PL-05-0194, June 2005.
2. JHU/APL, *Expanded CVISN Driver Information Sharing Capability Report: Access to Driver Data*, SSD-PL-05-0195, June 2005.
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7 Acronyms

AAMVA	American Association of Motor Vehicle Administrators
ASPEN	not an acronym
CDL	Commercial Driver's License
CDLIS	Commercial Driver's License Information System
CIO	Chief Information Officer
COMPASS	Creating Opportunities, Methods, and Processes to Secure Safety
COS	Criteria of Success
CSA	Comprehensive Safety Analysis
CSC	Computer Sciences Corporation
CSI	Cambridge Systematics, Incorporated
CVFM	Commercial Vehicle and Freight Mobility
CVIEW	Commercial Vehicle Information Exchange Window

CVISN	Commercial Vehicle Information Systems and Networks
CVO	Commercial Vehicle Operations
CVSA	Commercial Vehicle Safety Alliance
DOJ	Department of Justice
DOT	Department of Transportation
DSRC	Dedicated Short Range Communication
ENS	Employer Notification Service
ESD	Electronic Security Device
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
HazMat	Hazardous Material
HELP	Heavy Vehicle Electronic License Plate Program
HVUT	Heavy Vehicle Use Tax
ID	Identification
IFTA	International Fuel Tax Agreement
IRP	International Registration Plan
IRS	Internal Revenue Service
ITS	Intelligent Transportation Systems
JHU/APL	Johns Hopkins University Applied Physics Laboratory
JPO	Joint Program Office
MCMIS	Motor Carrier Management Information System
MHz	Megahertz
OS/OW	Oversize/Overweight
PF	Public Facilities
PRISM	Performance and Registration Information Systems Management
SAFER	Safety and Fitness Electronic Records
SSRS	Single State Registration System
T3	Technical Training by Telephone
TSA	Transportation Security Administration
US	United States
USDOT	United States Department of Transportation
VII	Vehicle Infrastructure Integration
WBDA	Warren B. Dunham Associates
XML	eXtensible Markup Language

Appendix A. Working Group Participants

This appendix lists those who participated in one or more meetings/teleconferences (from March to June 2005) for each working group.

Driver Information Sharing Working Group

Name	Organization	E-Mail
Tim Adams	AAMVA	tadams@aamva.org
Valerie Barnes	JHU/APL	valerie.barnes@jhuapl.edu
Mike Becker	North Dakota DOT	mibecker@state.nd.us
Roan Bennett	Cambridge Systematics, Inc. (CSI)	rbennett@camsys.com
Gene Bergoffen	MaineWay	bergoffen@earthlink.net
Steve Capecci	CSI	scapecci@camsys.com
Warren Dunham	Warren B. Dunham Associates (WDBA)	WBDA@aol.com
Herman Fauss	Landstar System, Inc.	hfauss@landstar.com
Joe Foster	Maryland State Highway Administration	jfoster@sha.state.md.us
Phillipe Guiot	AAMVA	pguiot@aamva.org
Mark Holmes	West Virginia DOT	mholmes@dot.state.wv.us
Nancy Kennedy	Volpe Transportation Center	Nancy.Kennedy@Volpe.dot.gov
Dennis Kroeger	Iowa State University	kroeger@iastate.edu
Brenda Lantz	North Dakota State University	brenda.lantz@ndsu.edu
Kevin Lewis	AAMVA	klewis@aamva.org
Nancy Magnusson	JHU/APL	nancy.magnusson@jhuapl.edu
Steve Monson	Colorado Department of Revenue	smonson@spike.dor.state.co.us
Elyse Mueller	FMCSA – Nebraska	elyse.mueller@fmcsa.dot.gov
Dan Murray (via e-mail)	American Transportation Research Institute	MurrayGuy@aol.com
John O'Hara	Volpe Transportation Center	john.o'hara@volpe.dot.gov
Julie Otto	TSA	julie.otto@dhs.gov
Sharon Owenson	FMCSA – Iowa	sharon.owenson@fmcsa.dot.gov
Sandra Salazar	JHU/APL	sandra.salazar@jhuapl.edu
Jeff Secrist	FMCSA	Jeff.Secrist@fmcsa.dot.gov
Greg Sensiba	AAMVA	gsensiba@aamva.org
Andrew Wilson	Volpe Transportation Center – CSC	Andrew.wilson@volpe.dot.gov
Jingfei Wu	Volpe Transportation Center	wu@volpe.dot.gov

Enhanced Safety Information Sharing Working Group

Name	Organization	E-Mail
Kendra Adams	New York State Motor Truck Association	kadams@nytrucks.org
Yusef Aden	District of Columbia DOT	yusuf.aden@dc.gov
Valerie Barnes	JHU/APL	valerie.barnes@jhuapl.edu
Gene Bergoffen	MaineWay	bergoffen@earthlink.net
Steve Capecci	CSI	scapecci@camsys.com
Linda Colby	Wisconsin DOT	linda.colby@dot.state.wi.us
Gil Diaz	South Carolina State Police	ggdiaz@scstp.org
Bill Dofflemyer	Maryland State Police	ndofflemyer@mdsp.org
David Doyle	Texas Department of Public Safety	david.doyle@txdps.state.tx.us
Warren Dunham	WBDA	WBDA@aol.com
Richard Easley	E-Squared Engineering	reasley@e-squared.org
Erin Fogel	CSI	efogel@camsys.com
Joe Foster	Maryland State Highway Administration	jfoster@sha.state.md.us
Buzzy France	Maryland State Police	ffrance@mdsp.org
Alan Frew	Idaho Transportation Department	alan.frew@itd.idaho.gov
Jeff Hall	FMCSA	jeff.hall@fmcsa.dot.gov
Pat Johnson	North Dakota State University	patrick.w.johnson@ndsu.edu
Steve Keppler	Commercial Vehicle Safety Alliance (CVSA)	stevek@cvsa.org
Richard Kershaw	Montana DOT Motor Carrier Services	rkershaw@mt.gov
Bob Kreeb	Booz Allen Hamilton	kreeb_bob@bah.com
Brenda Lantz	North Dakota State University	brenda.lantz@ndsu.edu
Nancy Magnusson	JHU/APL	nancy.magnusson@jhuapl.edu
Doug McKelvey	FMCSA	doug.mckelvey@fmcsa.dot.gov
Reymundo Rodriguez	Idaho Transportation Department	reymundo.rodriguez@itd.idaho.gov
Sandra Salazar	JHU/APL	sandra.salazar@jhuapl.edu
Jeff Secrist	FMCSA	Jeff.Secrist@fmcsa.dot.gov
Chuck Shue	Maryland State Highway Administration	cshue@sha.state.md.us
Carrie Silcox	Utah DOT	csilcox@utah.gov
Holly Skaar	Idaho State Police	holly.skaar@isp.idaho.gov
Mary Stuart	JHU/APL	mary.stuart@jhual.edu
Aves Thompson	Alaska DOT	aves_thompson@dot.state.ak.us
DJ Waddell	Maryland – JHU/APL	richard.waddell@jhuapl.edu
Rex Young	Alaska DOT & Public Facilities (PF)	rex_young@dot.state.ak.us

Smart Roadside Working Group

Name	Organization	E-Mail
Kendra Adams	New York State Motor Truck Association	kadams@nytrucks.org
Michael Akridge	Florida DOT	Michael.akridge@dot.state.fl.us
Valerie Barnes	JHU/APL	valerie.barnes@jhuapl.edu
Gene Bergoffen	MaineWay	bergoffen@earthlink.net
Steve Capecci	CSI	scapecci@camsys.com
Ron Char	JHU/APL	ronald.char@jhuapl.edu
Joe Crabtree	Kentucky Transportation Center at University of Kentucky	crabtree@engr.uky.edu
Bill Dofflemyer	Maryland State Police	ndofflemyer@mdsp.org
David Doyle	Texas Department of Public Safety	david.doyle@txdps.state.tx.us
Warren Dunham	WBDA	WBDA@aol.com
Richard Easley	E-Squared Engineering	reasley@e-squared.org
Erin Fogel	CSI	
Joe Foster	Maryland State Highway Administration	jfoster@sha.state.md.us
Buzzy France	Maryland State Police	ffrance@mdsp.org
Alan Frew	Idaho Transportation Department	Alan.Frew@itd.idaho.gov
Jeff Hall	FMCSA	Jeff.hall@fmcsa.dot.gov
Thad Hoffman	Idaho – Iteris	tth@iteris.com
Paul Hurd	Tennessee DOT	
Pat Johnson	North Dakota State University	patrick.w.johnson@ndsu.edu
Bill Joyce	New York State Motor Truck Association	bjoyce@nytrucks.org
Scott Karner	Alaska DOT	Scott_Karner@dot.state.ak.us
Steve Keppler	CVSA	stevek@cvsa.org
Richard Kershaw	Montana DOT	RKershaw@mt.gov
Bob Kreeb	Booz Allen Hamilton	kreeb_bob@bah.com
Dennis Kroeger	Iowa State University	kroeger@iastate.edu
Brenda Lantz	North Dakota State University	brenda.lantz@ndsu.edu
Nancy Magnusson	JHU/APL	nancy.magnusson@jhuapl.edu
Barry Mason	BGM Consulting	BGMConsulting@msn.com
Doug McKelvey	FMCSA	doug.mckelvey@fmcsa.dot.gov
Kevin Needham	Delaware DOT – Edwards and Kelcey	kneedham@ekmail.com
John O'Hara	Volpe Transportation Center	john.o'hara@volpe.dot.gov
John Orban	Battelle	orbanj@battelle.org
Reymundo Rodriguez	Idaho Transportation Department	reymundo.rodriguez@itd.idaho.gov
Sandra Salazar	JHU/APL	sandy.salazar@jhuapl.edu
Jeff Secrist	FMCSA	Jeff.Secrist@fmcsa.dot.gov

Name	Organization	E-Mail
Chuck Shue	Maryland State Highway Administration	cshue@sha.state.md.us
Holly Skaar	Idaho State Police	holly.skaar@isp.idaho.gov
Carrie Silcox	Utah DOT	csilcox@utah.gov
Mary Stuart	JHU/APL	mary.stuart@jhuapl.edu
Aves Thompson	Alaska DOT	aves_thompson@dot.state.ak.us
Ken Urquhart	Minnesota State Patrol	Kurquhar@mail1.dps.state.mn.us
DJ Waddell	Maryland – JHU/APL	richard.waddell@jhuapl.edu
Regis Wagner	Edwards and Kelcey	rwagner@ekmail.com
Casey Woodley	CSI	cwoodley@camsys.com
Jingfei Wu	Volpe Transportation Center	wu@volpe.dot.gov
Rex Young	Alaska DOT & PF	rex_young@dot.state.ak.us

Expanded E-Credentialing Working Group

Name	Organization	E-Mail
Doug Andrews	RL Polk	doug_andrews@polk.com
Bob Ayers	CSI	
Don Baker	New York DOT	dbaker@dot.state.ny.us
Valerie Barnes	JHU/APL	valerie.barnes@jhuapl.edu
Stella Boeta	Arizona DOT	sboeta@azdot.gov
Vince Brown	Batelle	BROWNV@BATTELLE.ORG
Steve Capecci	CSI	scapecci@camsys.com
Warren Dunham	WBDA	WBDA@aol.com
Tim Erickson	Washington DOT	erickst@wsdot.wa.gov
Joe Foster	Maryland State Highway Administration	jfoster@sha.state.md.us
Tim Galbraith	Wisconsin DOT	timothy.galbraith@dot.state.wi.us
Al Gerstner	Kansas Department of Revenue	al_gerstner@kdor.state.ks.us
Valinda Gorder	Parker Young	vpgimi@aol.com
Jerry Haupt	Arizona DOT	jhaupt@azdot.gov
Dick Hayworth	Indiana Motor Carrier Services	hayworth@iquest.net
Mike Hoeme	Kansas Corporation Commission	m.hoeme@kcc.state.ks.us
Sharon Holland	Utah – Meyer, Mohaddes Associates	sholland@mmausa.com
Jerri Hunter	Idaho Transportation Department	Jerri.Hunter@itd.idaho.gov
Keith Kennedy	Connecticut Department of Motor Vehicles	keith.kennedy@dmvct.org
Nancy Magnusson	JHU/APL	nancy.magnusson@jhuapl.edu
Mary Lou Muth	Arizona DOT	mmuth@azdot.gov
John O'Hara	Volpe Transportation Center	john.o'hara@volpe.dot.gov
Ken Reksc	New York Department of Taxation and Finance	kenneth_reksc@tax.state.ny.us
Hal Rumpca	South Dakota DOT	hal.rumpca@state.sd.us
Sandra Salazar	JHU/APL	sandra.salazar@jhuapl.edu
Jeff Secrist	FMCSA	Jeff.Secrist@fmcsa.dot.gov
Toni Shields	Arkansas Department of Finance and Administration	tonie.shields@rev.state.ar.us
Mary Stuart	JHU/APL	mary.stuart@jhuapl.edu
Kathy Swank	Kansas Corporation Commission	k.swank@kcc.state.ks.us
DJ Waddell	Maryland – JHU/APL	richard.waddell@jhuapl.edu
Jingfei Wu	Volpe Transportation Center	wu@volpe.dot.gov

Appendix B. Expanded CVISN Relationships to Other FMCSA Initiatives

This appendix contains a table that lists the proposed Expanded CVISN activities as rows and maps those activities to other FMCSA initiatives as columns.

The table also includes a column labeled "FMCSA/CVISN Priority":

- "CVISN" indicates the activity is a priority of the CVISN program and CVISN stakeholders.
- "FMCSA" indicates the activity is a priority of multiple FMCSA programs.

Working group members estimated the federal development effort/cost. The meaning of the "Effort/Cost" column values is explained as follows:

- Low means less than $100K
- High means more than $1M
- Medium is everything in between.

Capability	Proposed Activity	FMCSA/ CVISN Priority	Effort/ Cost	Other FMCSA Initiatives						
				PRISM	COMPASS	CDL	Tech Research	Driver Projects	CSA 2010	Border
Driver Snapshots	Define driver data to be shared	CVISN High	Low		✔				✔	
	Driver Safety Rating Focus Group	FMCSA High	Med						✔	
	Snapshot Light Prototype	FMCSA Medium	Med		✔					
Access to Driver Data	Facilitated Centralized Query Prototype	FMCSA High	Med		✔				✔	
Safety Data Quality	Coordinate with other info sharing initiatives (DOJ, AAMVA, etc.)	CVISN High	Low	✔						✔
	Standardize Information Sharing	FMCSA Med-High	High	✔	✔				✔	✔

Capability	Proposed Activity	FMCSA/ CVISN Priority	Effort/ Cost	Other FMCSA Initiatives						
				PRISM	COMPASS	CDL	Tech Research	Driver Projects	CSA 2010	Border
Carrier Access to Safety Data	Coordinate with COMPASS on a one-stop shop “carrier portal"	FMCSA High	Med-High		✔				✔	
	Evaluate ENS pilot for additional carrier notification functions	FMCSA High	Low-Med				✔		✔	
Roadside Access to Data	Define data needed at roadside	CVISN High	Low		✔		✔		✔	✔
	Expanded Roadside Information Prototype	CVISN High	High							
	Roadside Web-Based Tools Prototype	CVISN High	High		✔					
	Best Practices and Lessons Learned (roadside displays)	CVISN High	Med							
Virtual Roadside Sites	Standards for Identification	CVISN High	Med-High							
	Ongoing Technology Research and Test	FMCSA High	High		✔				✔	
	Best Practices and Lessons Learned (virtual roadside sites)	CVISN High	Med		✔					✔

Capability	Proposed Activity	FMCSA/ CVISN Priority	Effort/ Cost	Other FMCSA Initiatives						
				PRISM	COMPASS	CDL	Tech Research	Driver Projects	CSA 2010	Border
Better E-Credentialing	Best Practices and Lessons Learned (e-credentialing)	CVISN High	Med							
	E-Payment Mechanisms	CVISN High	Low-Med				✔			
	Benefit-Cost Framework	CVISN Medium	Low-Med							
Access to Credentials Data	On-line Access to HVUT Payment Status	CVISN High	Low-Med		✔					
	SAFER Access for Credentials Data	CVISN High	Med		✔					
Do What Core CVISN Calls For	Ensure single, unique USDOT number assigned; resolve existing problems	FMCSA High	Low		✔				✔	
	Provide technical support team	CVISN High	Low	✔						
	Encourage states to fill SAFER snapshot fields with credentials data	CVISN High	Low							
	Coordinate with IRP and IFTA registration and permitting agents	CVISN High	Low							
Stakeholder Communications	Set aside funding for annual effort to define priorities	CVISN Medium	Low							
	Don't limit number of Expanded CVISN initiatives	CVISN	Low							