



U.S. Department
of Transportation
Federal Highway
Administration

EXECUTIVE SUMMARY

CVISN

MODEL DEPLOYMENT INITIATIVE SUMMARY EVALUATION PLAN

July 1998



Prepared for:

U.S. Department of Transportation
ITS Joint Program Office, HVH-1
Room 3400
400 Seventh Street, S
Washington, D.C. 20590

Prepared by:

Battelle
505 King Avenue
Columbus, OH 43201

EXECUTIVE SUMMARY

CVISN

MODEL DEPLOYMENT INITIATIVE SUMMARY EVALUATION PLAN

July 1998

Principal Authors:

**John Orban (Battelle)
Daniel Brand (Charles River Associates)
Scott Amey (RS Information Systems)
John Kinateder (Battelle)**

Prepared for:

U.S. Department of Transportation

Notice

This document is disseminated under the sponsorship of the Department of Transportation in the interest of information exchange. The United States Government assumes no liability for its contents or use thereof.

1. Report No. FHWA-JPO-99-025	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle Executive Summary: CVISN Model Deployment Initiative Summary Evaluation Plan The full report is available as FHWA-JPO-99-026		5. Report Date July 1998	6. Performing Organization Code
		8. Performing Organization Report No.	
7. Author(s) John Orban, Daniel Brand, Scott Amey, John Kinateder		10. Work Unit No. (TRAIS)	
9. Performing Organization Name and Address Battelle Memorial Institute 505 King Avenue Columbus, Ohio 43201		11. Contract or Grant No. DTFH61-96-C-00077	
		13. Type of Report and Period Covered Evaluation Plan 1997-1999	
12. Sponsoring Agency Name and Address U.S. Department of Transportation Federal Highway Administration ITS Joint Program Office 400 Seventh Street S.W. Washington, D.C. 20590		14. Sponsoring Agency Code HVH-1	
		15. Supplementary Notes Contracting Officer's Technical Representative: Joseph I. Peters (JPO). CVISN Task Manager: Michael D. Freitas (FHWA) An electronic version of this document is available on the ITS Electronic Document Library: http://www.its.fhwa.dot.gov/cyberdocs/welcome.htm	
16. Abstract The purpose of the Commercial Vehicle Information Systems and Networks Model Deployment Initiative (CVISN MDI) is to demonstrate the technical and institutional feasibility, costs, and benefits of the primary Intelligent Transportation Systems (ITS) user services for commercial vehicle operations (CVO) and to encourage further deployment of these services. The Model Deployment Initiative focuses on three primary CVISN user services: Credentials Administration, Safety Information Exchange, and Electronic Screening. These services are expected to improve the administration of revenue, safety, and other regulatory functions in two prototype (Maryland and Virginia) and eight pilot (California, Colorado, Connecticut, Kentucky, Michigan, Minnesota, Oregon, and Washington) states. This Document (1) Describes the CVISN user services that are being deployed in the model deployment states, (2) Presents the overall strategy for evaluating CVISN services, (3) Presents the technical approach for implementing the evaluation strategy, (4) Identifies potential sources of CVISN evaluation data, and (5) Provides a plan for managing the CVISN MDI evaluation. The main work of the evaluation will be carried out in four study areas (Safety, Customer Satisfaction, Costs, and Institutional Benefits). Within these four study areas, several tests and analysis efforts are planned. They include literature searches, surveys of motor carriers and drivers, focus groups and personal interviews, site visits to state agencies and motor carriers, and special field test. Data collection began in early 1998 and will continue through mid 1999. Interim results will be available in late 1999.			
17. Key Words CVISN, Credentials Administration, Safety Information Exchange, Electronic Screening, Evaluation Plan		18. Distribution Statement No Restrictions	
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No of Pages 7	22. Price N/A

EXECUTIVE SUMMARY

The purpose of the Commercial Vehicle Information Systems and Networks Model Deployment Initiative (CVISN MDI) is to demonstrate the technical and institutional feasibility, costs, and benefits of the primary Intelligent Transportation Systems (ITS) user services for commercial vehicle operations (CVO) and to encourage further deployment of these services. The Model Deployment Initiative focuses on three primary CVISN user services:

- Credentials Administration (electronic credentialing and clearinghouses)
- Safety Information Exchange
- Electronic Screening.

These services are expected to improve the administration of revenue, safety, and other regulatory functions in two prototype (Maryland and Virginia) and eight pilot (California, Colorado, Connecticut, Kentucky, Michigan, Minnesota, Oregon, and Washington) states.

This CVISN Evaluation Plan

1. Describes the CVISN user services that are being deployed in the model deployment states
2. Presents the overall strategy for evaluating CVISN services
3. Presents the technical approach for implementing the evaluation strategy
4. Identifies potential sources of CVISN evaluation data
5. Provides a plan for managing the CVISN MDI evaluation.

CVISN MDI USER SERVICES

The CVISN deployments in each of the ten model deployment states include elements of each of the major CVISN user services. At a minimum, the prototype and pilot states have agreed to deploy the basic CVISN for credentialing and roadside enforcement, referred to as the "Level 1 Deployment." However, some states plan to deploy more fully developed systems, especially those supporting the roadside enforcement functions.

CVISN will incorporate a variety of changes to existing commercial vehicle credentialing and roadside enforcement operations, and the key features and schedules for deploying these two services vary considerably among the CVISN pilot and prototype states. One of the first steps in developing the evaluation strategy for CVISN was to identify the key innovative features that are expected to be deployed in one or more states, along with the major benefits that will result from their deployment. The key features include

- **Credentials Administration**
 - End-to-end electronic application and processing of credentials (including electronic submittals, direct links to legacy systems, edit checks, fee calculation, invoice generation, funds transfer, and production of credentials)
 - Use of PC-based versus Web Carrier Automated Transaction (CAT) System for submitting applications for credentials

- Printing of permanent or temporary credentials in carrier offices – especially for trip-related credentials (e.g., oversize/overweight)
- Interface with International Registration Plan (IRP) and International Fuel Tax Agreement (IFTA) clearinghouses.
- **Roadside Enforcement (Electronic Screening and Safety Information Exchange)**
 - Mainline screening for weight, credentials, and safety
 - Sorter lane screening using automated vehicle identification
 - Mobile units equipped with networked screening data
 - Real-time access to screening data at fixed sites and in mobile units
 - Facilities for screening on bypass routes.

EVALUATION STRATEGY

The evaluation of the CVISN MDI will furnish information to Federal Highway Administration (FHWA), Congress, states, public interest groups, and others on the desirability of making CVISN investments and corresponding enhancements to national, state, regional, and local transportation programs. It should permit comparisons between, and aid in developing priorities among, alternative investments within the FHWA's ITS program and between ITS and non-ITS programs. For this reason, the evaluation will include a comprehensive benefit/cost analysis (BCA) to determine the economic worth of CVISN deployments. However, it is equally important to document other benefits associated with the national ITS/CVO goals and to learn as much as possible about how CVISN changes the way in which commercial vehicle operations are carried out. Thus, a dual strategy has been developed to achieve two objectives:

1. Conduct a rigorous BCA to determine the net economic benefits of the CVISN MDI
2. Analyze and document additional outcomes and benefits of interest to various stakeholders in the CVISN model deployments that are not included in the BCA.

The measures for which data need to be collected, both for input to the BCA and for providing information on additional outcomes of interest to stakeholders, were established by considering the potential changes to the transportation system, identifying groups impacted by the changes, and obtaining their input on potential benefits and costs.

The "customer" groups affected by the deployment of CVISN are

- Motor carriers
- State governments
- Law enforcement agencies
- Shippers/receivers
- Members of the public
- Federal government.

The interests of these stakeholders or customers were considered early in the evaluation planning process. This was achieved in part through an evaluation workshop involving over 100 state, federal, and private partners. The potential benefits identified by the partners can be grouped under the five traditional Intelligent Transportation Systems (ITS) goal areas as follows:

Safety

- Fewer crashes involving trucks
- Increased personal safety of the motoring public.

Efficiency (increased throughput or capacity)

- Increased throughput at inspection sites
- Increased throughput of credentialing process.

Productivity (cost savings, revenue increases, increased output)

- Reduced time, cost, and uncertainty in credentialing
- Reduced cost of inspections
- Transit time reduced by bypassing inspection sites
- Transit time reduced by shorter stops at inspection sites
- Reduced accident costs
- Decreased tax and fee evasion
- More equitable treatment in paying taxes and fees
- Transit time decreased as a result of fewer crashes
- Reduced accident cleanup costs.

Mobility

- Reduced cost of goods movement to shippers/receivers and the public
- Decreased goods movement transit time and increased reliability of delivery schedules to/from shippers/receivers
- Increased cargo safety and security
- Reduced highway delays to public from fewer accidents.

Energy/Environment

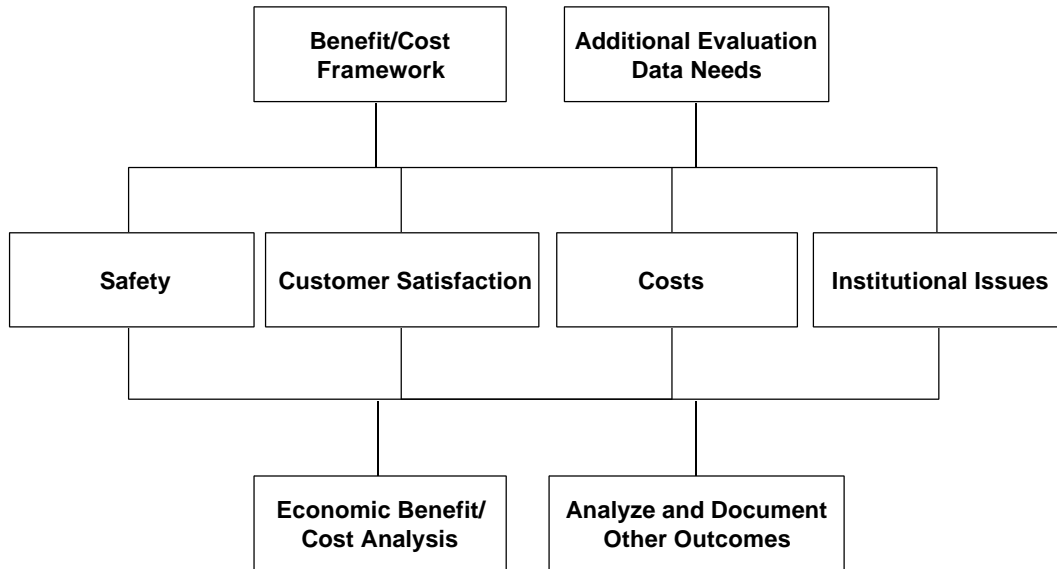
- Reduced energy consumption of trucks
- Reduced environmental impacts of trucks.

To help establish priorities for the evaluation strategy, the participants in the evaluation workshop were asked to rate the potential benefits according to their perceived importance. This was done after considering both the value of the benefits and the potential magnitude of the benefits. All of the groups participating in the workshop rated safety benefits the highest and efficiency second. Mobility, productivity, and energy/environment, in that order, were rated lower. Recall, however, that the relative importance of these benefits is inherently linked to their potential for achievement.

TECHNICAL APPROACH

The main work of the evaluation will be carried out in four study areas, as shown below. The first three study areas correspond to the major anticipated benefits. The institutional issues area will answer questions related to institutional and nontechnical benefits of, and impediments to, deploying CVISN. All

of the study areas derive data requirements from and will provide data and analyses for the economic BCA and document the other outcomes of interest to stakeholders.



Major Study Areas in the CVISN MDI Evaluation

Within the four study areas, several tests or analysis efforts are being planned. The tests, along with selected evaluation measures, are shown in the following table.

Planned Evaluation Tests

Tests	Selected Evaluation Measures
Literature Reviews	<ul style="list-style-type: none"> - Value of property damage, fatalities, personal injuries - Value of time savings (motor carriers) - Value and incidence of highway delays from accidents involving CVs - Value of noise and emissions reduction
Baseline National Motor Carrier Survey	<ul style="list-style-type: none"> - Awareness, attitudes, and satisfaction related to credentialing and enforcement practices - Factors affecting involvement in CVISN - Information to plan survey on motor carriers involved in electronic credentialing
Survey of Drivers	<ul style="list-style-type: none"> - Attitudes and opinions regarding roadside enforcement practices
Survey of Motor Carriers Using Electronic Credentialing	<ul style="list-style-type: none"> - Value of productivity increases - Overall satisfaction with credentialing services
Focus Groups	<ul style="list-style-type: none"> - Detailed information about attitudes, behaviors, and issues - Survey design information
Site Visits to State Offices	<ul style="list-style-type: none"> - CVO operating costs before and after CVISN deployment - Other inputs to BCA
Site Visits to Motor Carriers	<ul style="list-style-type: none"> - Credentialing costs before and after CVISN deployment - Other inputs to BCA - Input to motor carrier surveys
Accident Analysis	<ul style="list-style-type: none"> - Number of crashes and injuries, and amount of property damage related to CVs
Compliance Rate Study	<ul style="list-style-type: none"> - Proportion of trucks complying with safety regulations before and after CVISN
Screening Assessment Study	<ul style="list-style-type: none"> - Probability of inspection for "high risk" and "low risk" carriers
SAFER Data Mailbox Studies	<ul style="list-style-type: none"> - Amount of time to upload and download safety data from roadside - Number of out-of-service order violators identified (actual and potential)

Sources of Evaluation Data

The CVISN deployment plans of the ten prototype and pilot model deployment states present many opportunities to evaluate the costs and benefits of CVISN services. Every state has plans to deploy at least the basic CVISN services for credentialing and roadside enforcement (i.e., "Level 1 Deployment").

However, the schedule and level of deployment vary considerably from state to state. For example, some states will deploy fully operational CVISN services in 1998, while others will only begin testing certain systems and are less certain about the timeframe for full-scale deployment. Also, some states are focusing their resources on credentialing services, while others are putting more emphasis on roadside enforcement applications.

Rather than evaluate every CVISN component deployed in each state, deployments that provide the best opportunities to assess the impacts and benefits of selected CVISN services will be evaluated. In

addition to being an efficient way to use evaluation resources, this approach is consistent with the national perspective for evaluating the costs and benefits of CVISN services, not specific deployments.

Initially, data collection for each type of system will be focused in one or two states. However, because it is of interest to learn how the benefits are affected by differences in operating procedures and institutional factors, diverse applications will be sought when selecting the second and third deployment of each type of system to evaluate.

Before initiating new data collection efforts other sources of information will be considered. For example, many field operational tests and other programs related to ITS/CVO have been completed recently or are concurrent with CVISN deployment. Some of these tests could provide valuable information about CVISN benefits. Examples include Advantage I-75, Oregon Green Light, SAFER data mailbox, field operational tests of credentialing and safety enforcement services from the I-95 Corridor Coalition CVO Working Group, and the "one-stop" tests (midwest, southwest, and HELP). Recently completed studies conducted by the American Trucking Association and the National Governors Association will provide useful information on ITS/CVO costs to motor carriers and state agencies, respectively.

There will be significant collaboration with the evaluation efforts of several ongoing programs. For example, the CVISN and Oregon Green Light evaluation teams are cooperating on two safety-related tests in Oregon. Also, the SAFER Data Mailbox and I-95 CVO field operational tests will share data with the CVISN MDI safety studies in achieving their respective evaluation objectives.

MANAGEMENT PLAN AND EVALUATION SCHEDULE

The CVISN evaluation project is a cooperative effort among a large number of federal and state agencies and private contractors. As part of its mission to provide strategic leadership for ITS research, development, and deployment across DOT, the ITS Joint Program Office (JPO) has the ultimate responsibility for assessing (evaluating) the CVISN (MDI). The prime contractors supporting this effort are Battelle and SAIC. Battelle was assigned the primary responsibility for planning the national evaluation of CVISN. In addition, SAIC and several subcontracting organizations are also participating in this effort. Other participants include the John A. Volpe National Transportation Systems Center, FHWA (especially the Office of Motor Carriers), and, of course, the CVISN project teams from the ten prototype and pilot model deployment states. Johns Hopkins University's Applied Physics Laboratory, through its role as a system developer and CVISN program facilitator for the FHWA, is also providing valuable support to the CVISN evaluation effort.

Joe Peters of the JPO has the overall responsibility for ITS program assessment and is the COTR for the IPAS contracts with Battelle and SAIC. Mike Freitas (FHWA) is the Work Assignment Manager for CVISN evaluation. He is responsible for overseeing the technical approach of the evaluation project and serves as the JPO's principal government contact with state and federal partners. He provides technical guidance to Battelle and SAIC IPAS teams on all matters related to CVISN evaluation. John Orban, Battelle's Evaluation Leader and CVISN Evaluation Project Manager, is responsible for the day-to-day management of the technical activities and communications between the project team and various partners. Other team members include the four study area leaders and eight evaluation coordinators assigned to the ten model deployment states.

The planning schedule and milestones for the CVISN evaluation project are shown on the next page.



Schedule and Milestones