
CVISN Model Deployment and Mainstreaming

How Do They Fit?

prepared for

Federal Highway Administration

prepared by

Cambridge Systematics, Inc.
150 CambridgePark Drive, Suite 4000
Cambridge, Massachusetts 02140



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

January 1997



CVISN Model Deployment and Mainstreaming: How Do They Fit?

The work that has been underway for several years to apply Intelligent Transportation Systems (ITS) to Commercial Vehicle Operations (CVO) will take a major step forward in 1997, primarily through two initiatives sponsored by the Federal Highway Administration (FHWA): the prototype and model deployment of the Commercial Vehicle Information Systems and Networks (CVISN) technologies; and the mainstreaming program, which is organizing and managing ITS/CVO deployment. Through these two initiatives, the FHWA is investing in the technical and organizational infrastructure that is necessary to support widespread ITS/CVO technology deployment.

THE NATIONAL ITS/CVO PROGRAM

ITS involve the application of advanced and emerging technologies in such fields as information processing, communications, control, and electronics to surface transportation needs. ITS are being applied to CVO to streamline the administration of motor carrier regulations, focus safety enforcement on high-risk carriers, and reduce congestion costs for motor carriers. ITS/CVO products and services involve automating existing processes and operations, networking existing information systems, and changing the way that states and motor carriers do business.

The national ITS/CVO program comprises dozens of initiatives covering multiple functions. These initiatives represent the efforts of the Federal government, individual states, consortia of states, individual carriers, and industry associations. The program is developing capabilities in four broad areas:

- **Safety assurance.** Programs and services designed to assure the safety of commercial drivers, vehicles, and cargo. These include automated roadside safety inspections and carrier reviews, safety information systems, and onboard safety monitoring.
 - **Credentials administration.** Programs and services designed to improve the deskside procedures and systems for managing motor carrier registrations, fuel taxes, and other credentials. These include electronic application, purchasing, and issuance of credentials, as well as automated tax reporting and filing.
 - **Electronic screening.** Programs and services designed to facilitate the verification of size, weight, and credentials information. These include automated vehicle screening at weigh stations and international borders.
 - **Carrier operations.** Programs and services designed to reduce congestion and manage the flow of commercial vehicle traffic. The public sector role in this area is focusing on hazardous materials incident response services and travel advisory services. The private sector is leading the deployment of fleet and vehicle management technologies that improve motor carrier productivity.
-

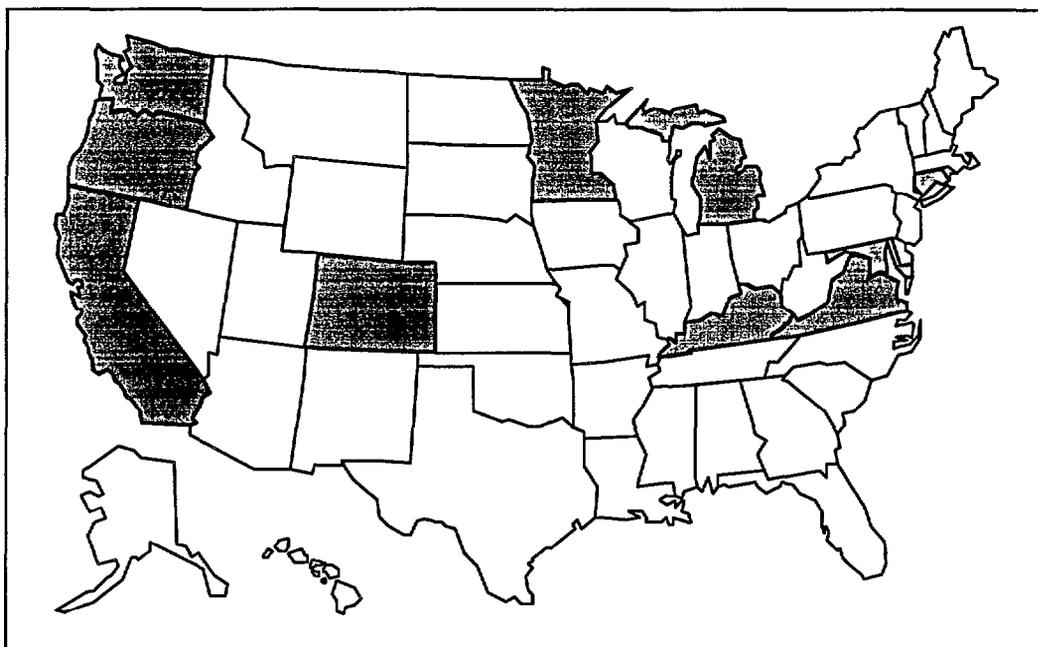
The ITS/CVO program already has made great progress. Key technologies such as weigh-in-motion, electronic data interchange, and mobile communications have been developed and deployed. States and carriers are participating in operational tests and deployments using these and other technologies to screen vehicles at weigh stations and international border crossings; to enforce out-of-service orders issued as a result of driver or vehicle safety inspections; and to create regional electronic “one-stop shopping” systems. Working with the states, the FHWA has deployed portable computers and inspection software at approximately 200 roadside inspection sites, nearly one year ahead of a Congressional mandate. In addition, all states have joined the national agreements to administer interstate vehicle registration and fuel tax collections.

STEPS TO NATIONWIDE DEPLOYMENT

The next steps toward achieving the goal of nationwide deployment involve the implementation and endorsement of two broad frameworks by the states:

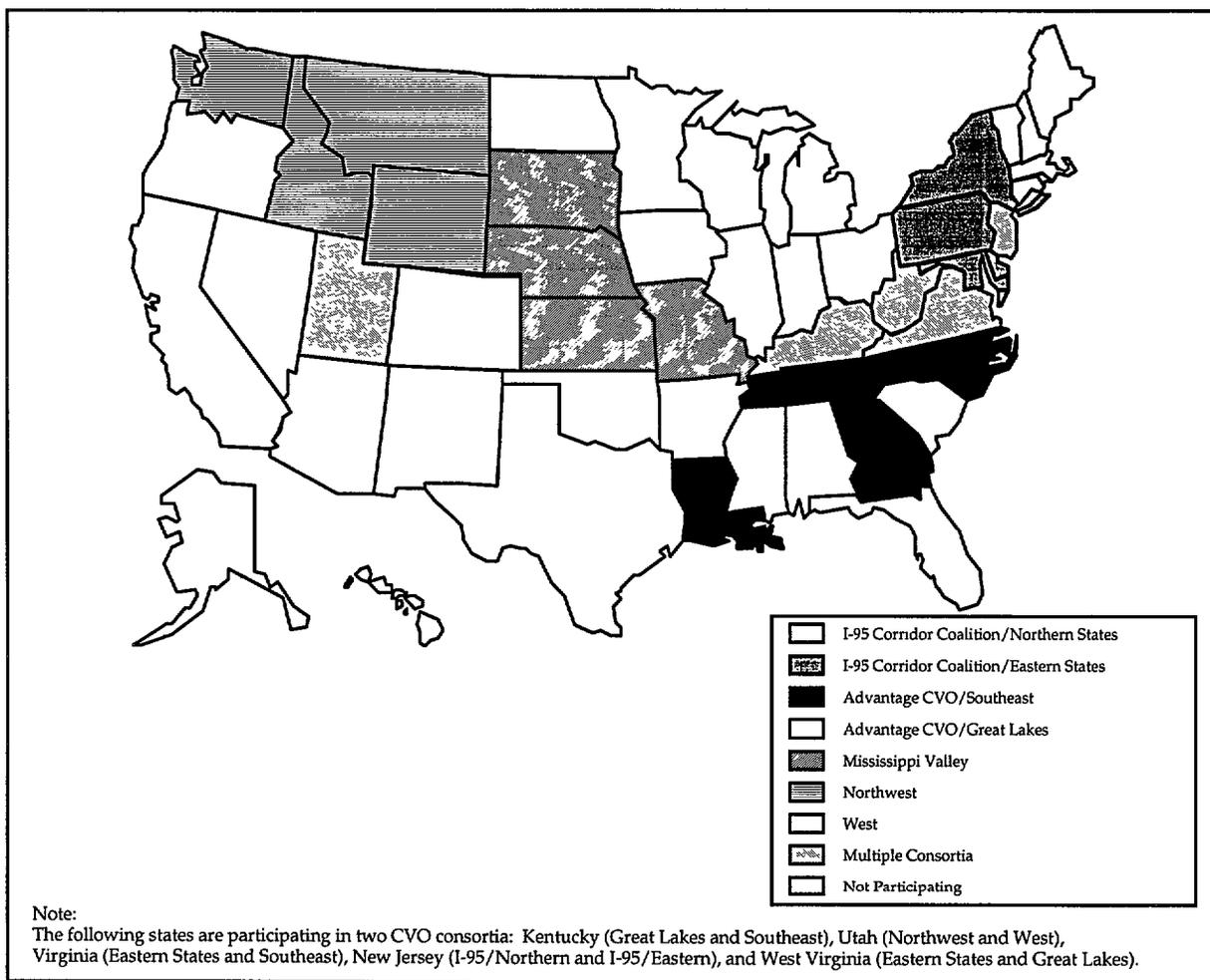
- **A technical framework for linking information systems and ITS/CVO services.** Through the CVISN initiative, the FHWA is developing a blueprint for a national ITS/CVO architecture and standards, protocols, and unique identifiers to facilitate the electronic communication capabilities that enable most ITS/CVO services. The CVISN model deployment initiative is testing the CVISN architecture and concept in two prototype states and eight pilot states (see Figure 1). This initiative includes the development of key multistate information systems and draft standards for electronic data interchange and dedicated short-range communication. Widespread use of these systems and endorsement of these standards are critical to encourage additional investment by the states and motor carriers.

Figure 1. CVISN PROTOTYPE AND PILOT STATES



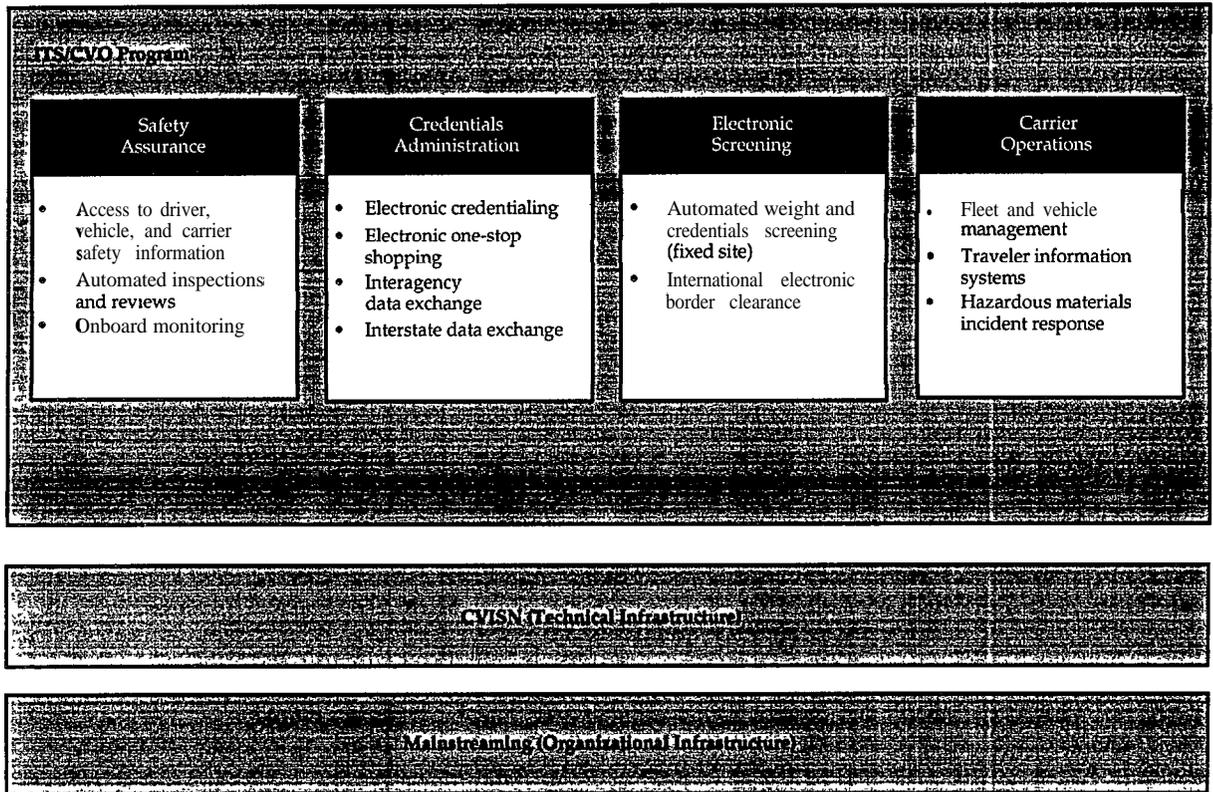
- **An institutional framework to coordinate ITS/CVO planning and deployment.** States and motor carriers must coordinate among the dozens of existing and planned operational tests and deployment activities to ensure that these disparate projects are compatible with the CVISN architecture, as well as to ensure cost effective use of resources. In addition, agencies and carriers must address policy and institutional issues at the state, regional, and national levels. The mainstreaming initiative is supporting the creation of state and regional ITS/CVO business plans and policy forums, as well as the appointment of “champions” to work with groups of states to promote and coordinate ITS/CVO deployment. A total of 33 states are participating in the initiative, organized into seven regional forums (see Figure 2).

Figure 2. REGIONAL ITS/CVO MAINSTREAMING FORUMS



Together, the CVISN model deployment and the mainstreaming initiative will build the technical and organizational infrastructure that will support nationwide deployment of ITS/CVO services (see Figure 3). Coordination between the CVISN and mainstreaming initiatives should occur at three levels: state, regional, and national.

Figure 3. ITS/CVO PROGRAM AREAS



WORKING TOGETHER AT THE STATE LEVEL

The mainstreaming initiative includes support for ITS/CVO working groups and business plans in each participating state. Mainstreaming will provide planning and policy support for the CVISN model deployment in the pilot states, and will initiate the organizational and technological changes necessary to move toward implementation of CVISN technologies in the remaining states.

- **State ITS/CVO Working Groups.** The state ITS/CVO working groups will oversee the ITS/CVO program of each participating state. In the CVISN pilot states, the working groups will focus on the integration of other activities and projects with the CVISN initiative. It is recommended that the ITS/CVO working group and CVISN steering committees overlap in membership. It may be appropriate for the CVISN steering committee to be a subcommittee of the broader ITS/CVO working group. In the remaining states, the ITS/CVO working groups are encouraged to establish a subcommittee to begin planning for CVISN deployment, with an emphasis on ensuring that other ITS/CVO projects and information systems are consistent with the CVISN architecture. The working groups also should consider inviting representatives from the CVISN pilot states in their “truckshed” to participate in meetings to share lessons learned and showcase new technologies.

-
- **State ITS/CVO Business Plans.** The state ITS/CVO business plans will define specific projects, responsibilities, milestones, and funding sources. The CVISN project plans developed by the pilot states will form one element of the broader ITS/CVO business plan. These business plans also will identify other ITS/CVO planning and deployment activities, and explain the relationship between these activities and the CVISN model deployment. In the remaining states, the state ITS/CVO business plans will incorporate a schedule for initiating CVISN deployment, assign responsibilities to key agencies, and develop a plan for funding CVISN deployment.
 - **Regional Champions.** The regional champions will provide support for state-level ITS/CVO planning, outreach, and technical research. The regional champions will give particular emphasis to the CVISN model deployment. The champions will participate in CVISN planning meetings in the region's pilot state. The champions will work with the lead agency, the ITS/CVO working group, the CVISN steering committee, and any third-party contractors to ensure that the pilot proceeds efficiently and is coordinated with other ITS/CVO activities in the state. The champions also will include the status and results of the CVISN pilot as a major element of outreach activities to other state agencies and the motor carrier industry.
 - **FHWA Division Offices.** The FHWA state director and staff will play an important role in coordinating among the CVISN and mainstreaming initiatives. Each division office will designate an ITS/CVO technical specialist to participate in both CVISN and ITS/CVO working group meetings. The FHWA Federal-aid offices will coordinate on projects involving the use of Federal highway funds.

WORKING TOGETHER AT THE REGIONAL LEVEL

At the regional level, the mainstreaming initiative will be critical to ensure that the CVISN initiative moves beyond the pilot states to incorporate other states.

- **Regional ITS/CVO Mainstreaming Forums.** Regional ITS/CVO mainstreaming forums will meet quarterly to review ITS/CVO activities in each member state, as well as to oversee regional initiatives. The agenda for each forum meeting should include a review of the CVISN model deployment in that "truckshed," focusing on major accomplishments, **problems**, and solutions. Twice a year, the forum meeting should be preceded by a day-long regional conference to bring together a broader cross-section of CVO stakeholders in the region to share progress and information regarding the CVISN model deployment. By attending pilot state showcases and reviewing key documents, other states in the region will lay the groundwork for CVISN implementation within the next two to three years.
- **Regional ITS/CVO Business Plans.** The regional ITS/CVO business plans will integrate the ITS/CVO business plans of each participating state. The regional plans should include a schedule for expanding the CVISN from the pilot state to other states in each region.
- **Regional Champions.** The regional champions will provide support for the regional forums, the development and implementation of the regional business plans, and the coordination of efforts with other regions and the national ITS/CVO program. In particular, the champions will manage the dissemination of information to other states in the region

about the benefits of, and lessons learned from, the CVISN pilot. The champions will organize the semi-annual CVISN regional conferences. The champions also will participate in CVISN planning meetings, workshops, and showcases.

- **FHWA Regional Offices.** The FHWA regional offices will provide support to the state directors and help ensure progress in meeting the CVISN and mainstreaming milestones in a cost-effective manner. An ITS/CVO technical specialist from each regional office will participate actively in both CVISN pilot state and regional ITS/CVO mainstreaming forum meetings.

WORKING TOGETHER AT THE NATIONAL LEVEL

At the national level, the mainstreaming initiative will be critical to ensure that nationwide deployment occurs as planned.

- **National ITS/CVO Forum.** Although other organizations play an important role in planning and policy, the ITS America CVO Technical Committee is the key forum for the national ITS/CVO program. ITS America is a Federal Advisory Committee to the U.S. Department of Transportation. Regular meetings of the new Policy Subcommittee will review the progress of both the CVISN and mainstreaming initiatives, focusing on how these two initiatives are contributing to the goal of nationwide ITS/CVO deployment. Membership on the Policy Subcommittee includes state-level officials drawn from the CVISN pilot and prototype states and the mainstreaming lead states.
- **FHWA Management.** The FHWA's Office for Motor Carriers (OMC) is managing both the CVISN model deployment and the mainstreaming programs. Staff from the OMC's ITS/CVO division will work internally with the FHWA's Research and Development Division and the U.S. DOT's Joint Program Office (JPO) for ITS, as well as externally with contractors and other organizations, to coordinate the direction of these two initiatives.

Attachment 1

CVISN Model Deployment

The CVISN initiative is developing a blueprint for a national ITS/CVO architecture and a framework for future cooperation and growth. Through the CVISN initiative, the ITS/CVO program is developing the following:

- Standards, protocols, and unique identifiers to facilitate the electronic data interchange and vehicle-to-roadside communications capabilities that enable most ITS/CVO services;
- Interstate clearinghouses for vehicle registration, fuel tax administration, hazardous materials permits, and other credentials; and
- The Safety and Fitness Electronic Records (SAFER) system to provide a much-needed link between existing and planned motor carrier safety information systems.

The CVISN is not a new database or system, but rather a way for existing systems to exchange information electronically through the use of standards and commercially available communications systems. The CVISN will integrate the information systems operated by the states, the FHWA, motor carriers, and other stakeholders. Its central vision is that by the year 2005, most CVO business transactions will be handled electronically.

The CVISN is being developed in five major stages:

- **Plan.** The first stage, which is nearly complete, is developing the management plans and technical framework necessary to coordinate the subsequent phases of the project.
- **Prototype.** Prototype tests in Maryland and Virginia began in early 1996. The prototypes are demonstrating the technology and refining the operational concept.
- **Pilot.** A pilot test or “model deployment” began in late 1996 in eight states - California, Colorado, Connecticut, Kentucky, Michigan, Minnesota, and a team of Oregon and Washington (see Figure 1).
- **Expansion.** Deployment will expand from the pilot states to other states in each ITS/CVO region.
- **Full Deployment.** Nationwide deployment among all interested states is expected to be completed by the year 2005.

The CVISN model deployment initiative will move the CVISN from the concept stage into operation. It is intended to **be** a cooperative effort among the FHWA, the states, government **and industry associations, and motor carriers. The pilot program will prepare for the** expansion of the CVISN to other states in three ways: by establishing a “core infrastructure” of multistate information systems and clearinghouses; by supporting the definition of formal standards for electronic communication; and by producing tools for use by other states.

For more information on the CVISN initiative, refer to the *CVISN Pilot Program Plan*, prepared for the FHWA by the Johns Hopkins University Applied Physics Laboratory, September 30, 1996.

Attachment 2

Mainstreaming Initiative

The FHWA's mainstreaming initiative will organize and manage the deployment of ITS/CVO services. The objectives of the mainstreaming program are to:

- Incorporate ITS/CVO more fully into state and metropolitan transportation planning activities;
- Coordinate ITS/CVO activities among agencies and among states; and
- Explain the ITS/CVO program to key decision makers in the public and private sectors.

The mainstreaming program includes the following types of activities:

- Providing support for state and regional working groups comprising representatives of key public and private sector CVO stakeholders;
- Developing state and regional ITS/CVO business plans that identify specific projects, milestones, funding sources, and responsibilities;
- Performing benefit/cost analyses and other technical studies that provide supporting information for deployment planning activities;
- Appointing a ITS/CVO "champion" in each region to work with the regional and state working groups and encourage ITS/CVO deployment; and
- Conducting outreach and educational activities to increase the awareness of, and support for, ITS/CVO activities.

Through its mainstreaming activities, the ITS/CVO program is developing policies, plans, and projects at three levels:

- **The state level**, because the states have the first-line responsibility for motor carrier regulations. The state program will emphasize planning for and deployment of specific ITS/CVO technologies and services. Each of the 33 participating states is forming a working group comprising representatives of the full range of agencies involved in CVO regulation and enforcement, as well as of the motor carrier industry. The working groups will develop business plans with specific projects, milestones, and funding sources. The regional champions will provide technical expertise and a regional perspective to support ITS/CVO planning activities in each state.
- **The regional level**, because many truck trips are interstate. Regional ITS/CVO programs will be developed by seven regional consortia to provide the context for the state programs (see Figure 2). The consortia correspond to the major "trucksheds" that are defined by freight generation and truck traffic volumes. Each regional consortium will establish an ongoing ITS/CVO mainstreaming forum to provide policy and program direction. Each

forum will produce and regularly update an ITS/CVO business plan. The champion will facilitate the work of the forum and the development of the business plan.

- The national level, because of the need to ensure uniformity of services for carriers operating in more than one region. The national program will emphasize the development of standards and uniform policies in areas that affect interstate commerce.

For more information, refer to *The ITS/CVO Mainstreaming Program* brochure and the Fall 1996 issue of *ITS/CVO Mainstreaming News*. A November 1996 memorandum from Rose McMurray, Director of the Office of Motor Carrier Safety and Technology, defined guidelines for the selection of the regional champions and the development of the state ITS/CVO business plans. Copies of these documents can be obtained by contacting the Office of Motor Carriers (OMC) field offices.