GUIDELINES FOR STATE ITS/CVO

NATIONAL ITS/CVO PROGRAMS

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What Is "Mainstreaming"?

The purpose of the Federal Highway Administration (FHWA)'s "mainstreaming" program is to organize and manage the deployment of Intelligent Transportation Systems (ITS) for Commercial Vehicle Operations (CVO). ITS/CVO services are streamlining the administration of motor carrier regulations, focusing safety enforcement activities on high-risk carriers, and reducing congestion costs for motor carriers. ITS/CVO services involve automating existing operations, networking information systems, and changing the way that states and carriers do business.

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.

Why Do We Need a Mainstreaming Program?

A mainstreaming program is necessary because ITS/CVO involves the introduction of new technology into a complex organizational environment and asks states and carriers to change the way they do business. Early operational tests and research projects indicates that most barriers to ITS/CVO deployment are institutional, not technical. These barriers include the needs to:

- Bring operations personnel from states and carriers together to discuss solutions to common problems;
- Build a constituency for ITS/CVO in public sector transportation planning processes; and
- Convince state administrators and legislators, as well as carrier executives, to invest scarce resources in ITS/CVO.

The experience of the past five years confirms that support for these types of activities will advance the ITS/CVO program.

What Activities Does Mainstreaming Include?

The mainstreaming program includes the following types of activities:

- Support for state and regional working groups comprising representatives of key public and private sector CVO stakeholders.
- Development of state and regional CVO business plans that identify specific projects, milestones, funding sources, and responsibilities.
- Benefit/cost analyses and other technical studies that provide supporting information for deployment planning activities.
- Appointment of a CVO "champion" in each region to work with the regional and state working groups and encourage CVO deployment.
- Outreach to and education of state and industry stakeholders that will increase the awareness of and support for ITS/CVO activities.

How Much Funding Is Available?

The FHWA has approved a total of $2.26 million for state and regional mainstreaming activities in fiscal year 1996. The FHWA will provide a minimum of $30,000 to each interested state and $100,000 to each of seven regional consortia. If fewer than 50 states participate, the FHWA will redistribute the remaining funds to accelerate the regional efforts. Individual states must provide a cost share equal to the amount of Federal funds received. The FHWA encourages, but does not require, cash contributions. The $100,000 in regional funds requires no cost sharing. Pending Congressional approval, additional funding will be available in fiscal year 1997.

How Will Mainstreaming Activities Be Organized?

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

- The state level, because it is the states that have the first-line responsibility for motor carrier regulations.
- The regional level, because many truck trips are interstate.
- The national level, because of the need to ensure uniformity of services for carriers operating in more than one region.

What Is the Role of the State Program?

The state program will emphasize planning for and deployment of specific ITS/CVO technologies and services, with a particular emphasis on the deployment of the Commercial Vehicle Information Systems and Networks (CVISN), a framework for electronic data interchange among agencies and carriers. This will be achieved through the following activities:

- **Working Groups:** Each participating state will form a working group comprising representatives of the full range of agencies involved in CVO regulation and enforcement, as well as the motor carrier industry. The experience of operational tests and institutional issues studies demonstrates that these groups are effective at improving awareness and communication within the CVO community.
- **Business Plans:** The working groups will develop business plans with specific projects, milestones, and funding sources. These business plans will formalize the CVO planning process, promote the development of public/private partnerships, and provide justification for ITS/CVO funding in state budgets. The business plans also will guide the integration of ITS/CVO technologies with existing state regulatory programs.

What Is the Role of the Regional Program?

Regional CVO programs will provide the context for the state programs. These regional programs will reflect the reality that most truck movements are regional and local rather than national; that most state-to-state interaction occurs within loosely defined regions or "trucksheds"; and that the needs and interests of state agencies and motor carriers differ more across regions than within them.

Available data on freight generation and truck traffic loosely define seven "trucksheds." Participating states are encouraged to join one or more such regional consortia. This structure will ensure that the development and deployment of ITS/CVO services matches the markets.

The regional mainstreaming program will include the following activities:

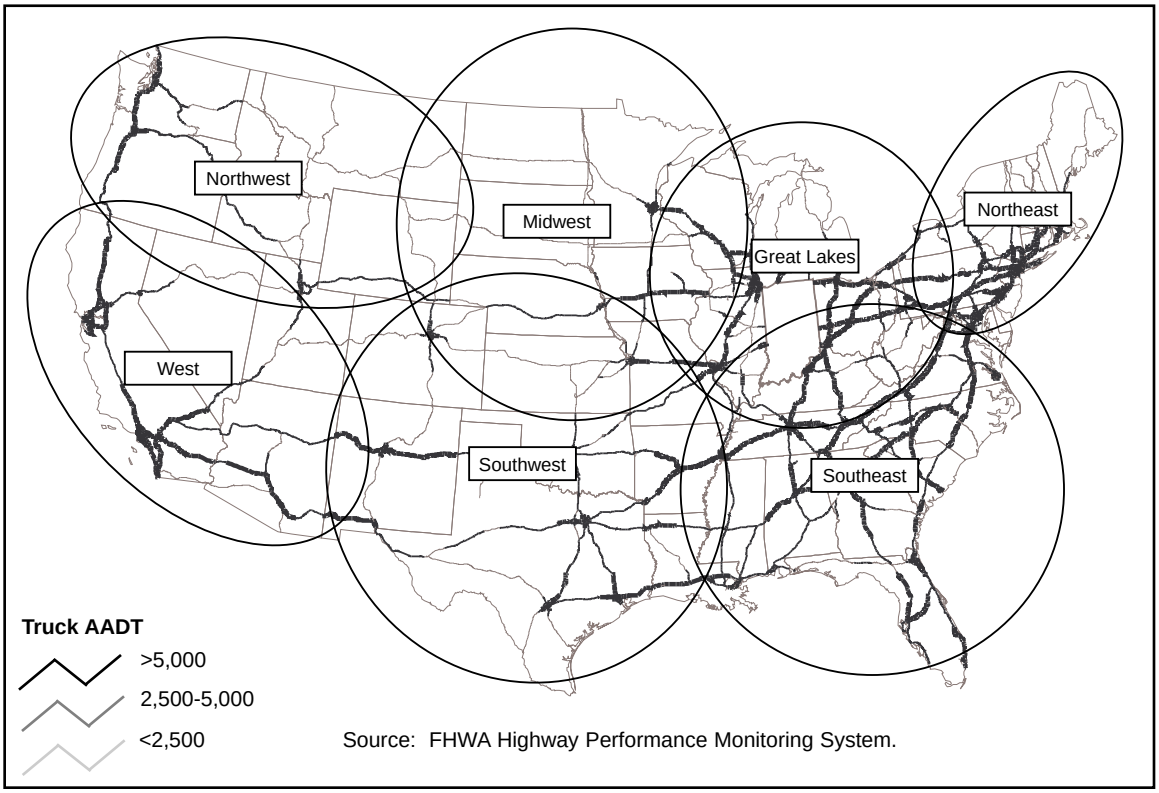
- **Regional Forums:** The primary objective of the regional consortia will be to establish an ongoing, regional CVO forum that can provide policy and program direction. These forums will include both public agencies and motor carriers. Although state government provides a framework for coordinating CVO activities at the local level, and Federal government and trade associations provide a framework at the national level, little integration occurs at the regional level. These forums will fill a critical gap in the current CVO organizational structure.
- **Business Plans:** Each regional consortium will produce and regularly update an ITS/CVO business plan. The regional plan will reflect coordination with the constituent state CVO plans, and show how the regional program will integrate its effort with the national ITS/CVO program.
- **Regional "Champion":** Each regional consortium will hire the equivalent of a full-time "champion" or program director. This "champion" will facilitate the work of the forum and the development of the business plan. The champion also will present and explain ITS/CVO services and their potential benefits to administrators, legislators, motor carriers, and the public. A strong outreach and education program targeted at ITS/CVO users is critical to ensuring long-term deployment success.

What Is the Role of the National Program?

The national program will emphasize the development of standards and uniform policies in areas that affect interstate commerce. Working with the FHWA, the ITS America CVO Committee will play an important role in the evolution of the national program. The development of the national ITS/CVO program will be coordinated with the broader national ITS program and architecture.

Regional Trucksheds:

Average Annual Daily Truck Traffic on Interstate Highways



How Will the Program Be Managed?

The FHWA will manage the mainstreaming program through its Office of Motor Carriers region and division offices, in cooperation with the Federal-aid offices. The ITS/CVO division in the FHWA headquarters will provide high-level oversight and support.

What Is the Implementation Schedule?

The FHWA expects that the first round of state and regional business plans will be completed by March 1998. Pending Congressional approval, it is anticipated that the mainstreaming program will continue through fiscal year 1999, with the Federal share of the costs decreasing each year.

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Produced by the U.S. Department of Transportation, Federal Highway Administration, Office of Motor Carriers, ITS/CVO Division.

U.S. Department of Transportation
Federal Highway Administration

NATIONAL ITS PROGRAM PLAN

EXECUTIVE SUMMARY

FIRST EDITION
MARCH 1995

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101520

Abstract

The purpose of the *National ITS Program Plan* is to guide the development and deployment of Intelligent Transportation Systems (ITS) in the United States. This first edition of the Plan was a joint effort of ITS America and the United States Department of Transportation. The plan was developed through a consensus process involving the entire ITS community. The *National ITS Program Plan* consists two volumes. An Executive Summary and a Synopsis are also available. The Executive Summary provides a very brief overview of the goals, objectives, and recommendations presented in the *National ITS Program Plan*. The Synopsis provides a 50 page encapsulation of the major subject areas within the document, with special emphasis on deployment. Volume I focuses on goals, compatibility, deployment, and program assessment. Volume II contains detailed descriptions and plans for each of the 29 user services.

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This document was produced, in part, with funding provided by the U.S. Department of Transportation, Contract Number DTFH61-94-R-00076.

PREFACE

This first edition of the *National ITS Program Plan* was a joint effort of ITS America and the United States Department of Transportation. The plan was developed through a consensus building process which sought the involvement of the entire ITS community. Over 36 individuals participated actively as authors, and well over 200 individuals from a wide range of organizations critiqued, commented, and otherwise contributed substantially to the material presented here.

The *National ITS Program Plan* consists of two volumes. An Executive Summary and a Synopsis are also available. The Executive Summary provides a very brief overview of the goals, objectives, and recommendations presented in the *National ITS Program Plan*. The Synopsis provides a 50 page encapsulation of the major subject areas within the document, with special emphasis on the area of deployment. Volume I focuses on the goals of ITS, compatibility, deployment, and program assessment. Volume II contains detailed descriptions and plans for each of the 29 user services.

Work on the *National ITS Program Plan* formally commenced in June, 1993. The Second and Final Drafts of the Plan, completed in May 1994 and November 1994 respectively, incorporated the comments and contributions of a substantial number of individuals and organizations. In total, more than 4,000 draft copies of the plan were distributed to ITS America members, U.S. DOT staff, and the general public through the Federal Register. Over 200 individuals and organizations commented and provided input for one or more of the drafts.

The process of developing the *National ITS Program Plan* was, in itself, a valuable exercise. The focus of the first draft was upon the creation of the user service development plans now contained in Volume II. The remainder of the draft consisted largely of annotated outlines. A Joint Writing Team (JWT) was formed and given the responsibility of developing the Plan. In the second draft, the deployment and deployment considerations chapters took shape, and with the third draft, deployment scenarios emerged. Each draft represented significant advances in our deliberations on ITS technology, systems, deployments, and impacts.

Overall guidance to the JWT on the Plan was provided by U.S. DOT officials and the ITS America Planning Committee. The Joint Writing Team, co-chaired by Doug Robertson (ITS America) and Gary Euler (US DOT ITS Joint Program Office), consisted of ITS America and US DOT staff and ITS America members. The JWT members, acknowledged by name and organization below, worked extensively with ITS America members, US. DOT staff, and the general public with a goal of ensuring balanced representation of the goals, objectives, concerns, and needs of a diverse ITS Community.

The field of ITS is advancing rapidly on many fronts; keeping abreast of it will require a continuing effort. This document will serve as the basis for periodic updates, providing information on activities, as well as projections for the future.

I. INTRODUCTION

Surface transportation in the United States faces a number of challenges. Despite the fact that the United States has one of the best surface transportation systems in the world, mobility is declining and safety remains a serious problem. Inefficient movement of vehicles reduces productivity, wastes energy, increases emissions, and threatens the quality of life we enjoy. The continued development and maintenance of a safe, efficient, environmentally responsible transportation system is vital to the social and economic health of the nation.

Intelligent Transportation Systems (ITS) apply advanced and emerging technologies in information processing, communications, control, and electronics to meet surface transportation needs. ITS, formerly called Intelligent Vehicle-Highway Systems (IVHS), provide a means to address current problems, as well as anticipate and address future demand through an intermodal, strategic approach to transportation. While ITS technology alone cannot solve our transportation problems, it can enable us to re-think our approach to problem solutions, as well as to make current activities more efficient.

The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA)

The Intelligent Vehicle Highway Systems Act within the Intermodal Surface Transportation Efficiency Act (ISTEA) established the IVHS (now ITS) program in the United States and called for the development of the US DOT Strategic Plan for IVHS. The purpose was to provide a new vision of surface transportation in America.

The Act was structured to address a number of the societal challenges involved in providing accessible transportation, including the goals of:

- enhancing the capacity, efficiency, and safety of the highway system, including alternatives to additional physical capacity;
- enhancing efforts to attain air quality goals established by the Clean Air Act;
- reducing societal, economic, and environmental costs associated with traffic congestion;
- developing and promoting an ITS industry in the United States, particularly creating an American presence in this emerging field of technology; and
- developing a technology base for ITS systems.

Goals and Objectives

The national ITS program goals and objectives evolved as the program developed. The program goals set out in ISTEA provided the basic framework, and were expanded in both ITS America's *Strategic Plan for Intelligent Vehicle-Highway Systems* and the US DOT's *IVHS Strategic Plan.* The goals are to:

- Improve the safety of the nation's surface transportation system;
- Increase the operational efficiency and capacity of the surface transportation system;
- Reduce energy and environmental costs associated with traffic congestion;

- Enhance present and future productivity;
- Enhance the personal mobility and the convenience and comfort of the surface transportation system; and
- Create an environment in which the development and deployment of ITS can flourish.

Potentially, the most effective approaches to developing a more efficient, safe, environmentally conscious transportation system are those which address the fundamental goal of transportation as one of "moving passengers and goods" through a system by the most efficient, effective means possible. This requires that transportation policy makers, service providers, planners, and users develop a "systems approach" to transportation. The system is viewed as an integrated transportation network where users have the choice of a number of modes, routes, and travel times, and may move easily through the system. Achieving more integrated transportation systems requires institutional, legal, and technical innovation. In some instances, the technological capabilities provided by ITS can facilitate institutional changes which remove barriers to the development of integrated systems.

II. THE PLAN

The Strategic Plans for IVHS developed by ITS America and the US DOT articulated the need to develop a framework for the deployment of ITS. This framework would provide a common conceptual language for discussing ITS, address the potential roles of various levels of government, and identify and address the impacts of ITS and the potential barriers to the development of beneficial services. The specific goals of the National ITS Program Plan (NPP) are to:

- Promote shared ITS goals, providing integrated descriptions of activities that are public, private, and cooperative;
- Guide ITS investment decisions, laying a foundation for the private and public sectors, and service consumers;
- Encourage coordination by providing a framework for planning;
- Focus on deployment by reflecting on the key forces affecting deployment decisions, and the order in which user services can and likely will be deployed;
- Facilitate the development of an intermodal, integrated national transportation system by presenting visions of ITS deployment which facilitate intermodal linkages for passengers and freight.

The NPP is the result of a joint effort of the US DOT and ITS America. Authors and editors were drawn from ITS America members and staff, and US DOT staff. In total, more than 35 individuals contributed substantial text and editorial assistance in the formation of this plan. Another 200 reviewed one or more drafts of the document. The contributors to the plan included representatives from local, state, and federal government; universities and research organizations; other societies and public interest groups; and the private sector. Private sector

participants represented manufacturers, transportation service providers, communications companies, and transportation consultants. In short, this diverse group represented most of the ITS community .

The NPP is structured around the concept of "User Services." These User Services are, in essence, products and services that may be developed to meet the needs of users. In this context, the term "user" refers to a wide range of individuals and organizations including travelers, service providers, and transportation policy makers.

The 29 user services are shown in Table 1. Some of these are oriented toward meeting the needs of individual travelers, others focus on efforts to provide efficient, cost effective transportation services under a wide range of circumstances. These services do not cover every possible application of ITS, rather they are intended as steps toward the development of a common framework for discussion, The list of services and their definitions are expected to evolve over time. New services may be added and existing service descriptions may change.

HI. THE DEPLOYMENT OF ITS

The deployment of ITS will be distinctly different from the centralized, staged development of major national systems in the aviation, defense, and space programs. One reason for this is the extremely diverse set of players involved in the development, planning, deployment and operation of transportation infrastructure and services. Some ITS products will be developed and deployed wholly within the private sector, as consumer products. Other ITS deployment and operations will unfold through partnerships involving federal, state, and local governments, and the private sector. Others may be primarily public sector activities.

Where is ITS Today?

ITS should not be regarded as futuristic or even the technology of tomorrow. ITS is here and now. Traffic surveillance systems are increasingly visible on the roadway. Commercial vehicles and transit operators routinely use vehicle location systems and on-board computers to manage their fleets. Electronic toll collection systems are springing up around the country, and in-vehicle route guidance systems are available to consumers. Table 2 presents a "snapshot" of current deployment in the United States.

How Will ITS Be Deployed in the Future?

As shown above, there are a number of ITS services emerging in the market place. A number of others are "on-the-shelf" and could be deployed under the proper circumstances. ITS could evolve over the next 10 years in a number of possible ways. Future deployment of ITS can be characterized as a three-stage process:

1997-1999: The Era of Travel Information and Fleet Management
2000-2005: The Era of Transportation Management
2010: The Era of the Enhanced Vehicle.

Table I- User Service Bundles

Bundle	**User Services**
1. Travel and Transportation Management	1. En-Route Driver Information 2. Route Guidance 3. Traveler Services Information 4. Traffic Control 5. Incident Management 6. Emissions Testing and Mitigation
2. Travel Demand Management	1. Demand Management and Operations 2. Pre-Trip Travel Information 3. Ride Matching and Reservation
3. Public Transportation Operations	1. Public Transportation Management 2. En-Route Transit Information 3. Personalized Public Transit 4. Public Travel Security
4. Electronic Payment	1. Electronic Payment Services
5. Commercial Vehicle Operations	1. Commercial Vehicle Electronic Clearance 2. Automated Roadside Safety Inspection 3. On-board Safety Monitoring 4. Commercial Vehicle Administrative Processes 5. Hazardous Materials Incident Response 6. Freight Mobility
6. Emergency Management	1. Emergency Notification and Personal Security 2. Emergency Vehicle Management
7. Advanced Vehicle Control and Safety Systems	1. Longitudinal Collision Avoidance 2. Lateral Collision Avoidance 3. Intersection Collision Avoidance 4. Vision Enhancement for Crash Avoidance 5. Safety Readiness 6. Pre-Crash Restraint Deployment 7. Automated Highway System

Table 2: A Snapshot of Current Deployment

Travel and Transportation Management

Many metropolitan and state transportation agencies employ some form of advanced transportation management system. Loop detectors, video cameras, and vehicle identification devices such as toll tags can be used to monitor current traffic conditions. Active control of traffic is achieved through use of signal timing, ramp meters, variable message signs, highway advisory radio, and commercial traffic information reporting services. Adaptive, real time traffic control systems are now available, but most signal timing adjustments are still made by time of day or other pre-established patterns.

Private sector companies collect travel information from a variety of sources; then package and sell the information. Radio and television broadcasts provide travelers with information that may allow them to make better travel choices. Personal devices (such as digital cellular telephone and paging systems, portable digital personal communications devices, in-vehicle subcanier radio, and palm top computers) can be used to receive travel information; however, widespread implementation is hampered by uncertainty about marketability and a lack of specific, localized traveler information.

Static route guidance systems are commercially available to consumers as in-vehicle devices, in rental cars, and as personal computer software packages. Dynamic route guidance systems cannot be widely implemented until more real-time travel data is available and greater consistency can be achieved among jurisdictions.

Commercial Vehicle Operations

Commercial fleet management systems have been deployed in over half the major US trucking fleets. Private truck and bus companies incorporate safety data from on-board devices, such as engine temperature and driver hours, in their routing and dispatching decisions. Automatic vehicle and container identification systems are expediting just-in-time deliveries and intermodal shipping operations.

Motor Carrier Management Information System (MCMIS) is a federal database of motor carrier safety information used by states in roadside inspections. Automatic vehicle identification and weigh-in-motion technologies are used to gather information on truck credentials and vehicle weight. Heavy Vehicle Electronic License Plate, Inc. (HELP, Inc.) and the Advantage I-75 operational test will soon use electronic clearance services to permit safe and legal trucks equipped with transponders to bypass weigh stations and state ports-of-entry at highway speeds.

Some states are use pen-based data input devices to quickly upload inspection data electronically, reducing the total time for routine roadside safety inspections of trucks and buses. Vehicle inspections still are conducted manually. Advanced inspection procedures are under development.

Advanced Vehicle Control and Safety Systems

A few longitudinal and lateral collision warning systems are available on the market. AU of the major automobile manufacturers are working on intelligent cruise control systems. These systems are expected to be available within 3 to 5 years, perhaps in conjunction with rear end collision avoidance systems to reduce liability risks.

Public Transportation Operations

Most large- and medium-sized transit agencies use scheduling and run-cutting software. Computer-aided dispatch transit radio systems and automatic vehicle location systems are becoming more commonplace among agencies. Fourteen transit properties currently have automated vehicle location capability. Location information is provided by GPS, signposts, or map matching applications.

Demand responsive trip scheduling software is in widespread use in specialized transportation systems for older and disabled travelers. Some small systems use route deviation schemes. Advanced transit security devices, such as closed circuit TV in parking lots and stations, slow-scan recording cameras in vehicles, and emergency alarms in vehicle radios, are in use.

Emergency Management

Nationwide, 24 emergency management systems are now equipped with automatic vehicle location (AVL) systems, 104 others are planning to implement AVL. Enhanced 9-l-l deployment is bringing emergency services to accident scenes more quickly and efficiently. Through automatic phone number and location identification, emergency service vehicles are assigned to respond and are quickly routed to the proper location.

Electronic Payment

Several public transit systems now use magnetic stripe technology to collect fares. Some systems are evaluating the use of "smart cards" for multiple transportation and non-transportation purposes, such as parking fees and telephone usage. Electronic payment systems are planned or deployed at 20 toll facilities around the country, and a robust, competitive market has developed for these systems. In some regions efforts are underway to install compatible systems in adjacent states, but broad interoperability has not yet been achieved. Standards development to address interoperability is making headway, however.

Table 3 provides descriptions of the systems that may be deployed in each of these eras. The final form of ITS deployment will be influenced by a confluence of factors and the cumulative impact of decisions made by a number of diverse players. Private sector activities in ITS depend heavily on their confidence in the market for ITS and their ability to develop a revenue stream. Because state and local governments are directly responsible for construction, operation, and maintenance of the transportation systems in their jurisdictions, they have a major role in how ITS deployment will take shape. The US DOT has an important role in supporting the deployment of ITS through research, development, testing, and support for early deployment planning.

IV. SUPPORTING ITS DEPLOYMENT

ITS deployment is under way. The NPP identifies a number of broad challenges that will sustain and in some cases, accelerate the development and deployment of ITS. These include the problems of national compatibility and a series of near- and long-term institutional challenges.

National Interoperability

National compatibility and interoperability is not likely to emerge from a random, evolutionary process. It must be fostered through cooperation. The development of the National ITS Architecture and on-going work in the development of standards are essential components of this effort.

The National ITS Architecture will provide a framework that describes how ITS components interact and work together to achieve total system goals. Many different designs might be implemented within the framework of an architecture. An open system architecture will describe the system operation and the information exchanged among the components. The architecture will also be modular, which will facilitate the introduction of new technologies and system capabilities. Phase I, completed in January 1995, produced four architectures. Two teams, led by Loral Federal Systems and Rockwell were selected to implement Phase II. They are working together in a non-competitive environment to refine the Phase I architectures into a single national ITS architecture. This phase began in February 1995 and is scheduled for completion in July 1996. Each step in the process has included a broad consensus effort as an intregal part of the architecture development.

Establishment of ITS standards will also accelerate ITS development and deployment in several ways. Appropriate standards will facilitate national, global, and cross-modal compatibility and interoperability and help U.S. industries gain greater access to the international ITS marketplace by ensuring that ITS components will operate in a consistent, predictable way. Standards development will improve overall product design and performance, safety, and ease of operation and maintenance. The emergence of industry

Table 3: Future Deployment Scenarios

1997.1999: THE ERA OF TRAVEL INFORMATION AND FLEET MANAGEMENT

Private companies and public agencies at all levels, and for all modes collect travel data; however, no one has a broad enough information network to support real-time, detailed travel decision making. A crucial ITS objective in the next three to five years is to build the relationships among public agencies and private companies necessary to share data from all modes of surface transportation and provide that data to the public in a timely and effective way. The development of rich, shared travel information bases could provide the foundation on which states and metropolitan areas could support and integrate many ITS traffic, transit, safety, and commercial vehicle services. Over time, data bases will be expanded to provide more detailed and comprehensive transportation information.

Data sharing for commercial vehicle operations will accelerate as well. State databases, linked to exchange regulatory and safety information, will boost the use of advanced technologies to verify cmdentials and monitor fleet safety performance. Automated vehicle identification and weigh-in-motion systems will be operational on most major trucking corridors and international border crossings. Navigation systems using GPS and satellite communications will become common in truck and bus fleets, enhancing the efficiency of freight distribution and fleet management systems.

Electronic toll collection systems will be deployed at an accelerated pace as their convenience is recognized by the general public and toll authorities begin to achieve cost savings.

By reaching this interim ITS deployment scenario, the stage will be set for achieving longer term transportation management objectives and establishing U.S. industries as strong players in the global market for ITS technologies and services. The completion of the national ITS architecture and the emergence of more public infrastructure will provide private sector companies with greater confidence about entering the ITS market and supporting the communications required by transportation management systems.

The technologies will be available to implement congestion pricing if local policy dictates. Revenues from congestion pricing applications and privatization activities might be seen as an appropriate resource for ITS operations and maintenance funding.

Automobile manufacturers will offer a variety of in-vehicle products, such as intelligent cruise control. Autonomous route guidance systems will be readily available to consumers, and as travel information bases mature, dynamic route guidance will become possible in some parts of the country. Mayday safety and security services will be deployed in both rural and urban areas.

2000-2005: THE ERA OF TRANSPORTATION MANAGEMENT

By the turn of the century the vision of the "smart traveler" can indeed become a reality. With the institutional mechanisms and transportation infrastructure in place to provide a steady stream of reliable travel information, effective personal and public transportation management can take place. State and local agencies will have established the alliances with the private sector for the travel information dissemination methods that work best in their own areas. More capable roadside-to-vehicle communications infrastructure will be deployed to provide richer data and real-time, adaptive traffic control over large areas will become a realistic goal.

Jurisdictions will cooperate to support real-time sharing of information and transportation management strategies by traffic, freeway, transit, and emergency services control centers. Integration and adaptive control of freeways and surface streets will improve the flow of traffic, give preference to public safety, transit, and other high occupancy vehicles, and minimize congestion. The public and private sectors will cooperate to share the up-to-the-minute information needed to support real-time, dynamic route guidance systems for private and commercial vehicles.

Universal electronic payment systems will be available for tolls, transit fares, parking, and other financial transactions. Communities wishing to implement congestion pricing strategies will have a ready infrastructure and may see this as a source for operations and maintenance support.

By the year 2000, electronic clearance for commercial vehicles may be operational nationwide. An integrated network and database of electronic clearance and safety information will be available to support North American uniformity and productivity for the nation's commercial fleets. Hazardous materials incident notification services will provide early, accurate information for emergency responders in some segments of the motor carrier industry.

In this second wave of deployment, application of aerospace and defense technologies will provide dramatic advances to automotive systems to improve traveler safety and provide real-time navigation assistance. Enhanced vehicle control systems, such as lateral warning and early collision avoidance features, will be marketed in private vehicles. Deployment of vehicle-to-vehicle communications systems may make preliminary intersection collision avoidance systems possible.

2010: THE ERA OF THE ENHANCED VEHICLE

By the year 2010, research and testing will have brought ITS to a stage of reliability and accuracy that will support introduction of more sophisticated vehicle safety and control services, such as in-vehicle signing and more advanced collision avoidance systems. These advanced systems will include lateral and longitudinal space control, vision enhancement systems, and assisted braking and steering. The data collection, sharing, and dissemination systems established in preceding years will provide a foundation for the early stages of deployment of automated highway systems.

standards will also boost consumer confidence, because new ITS products would be more likely to retain their value. Costs for manufacturers could be reduced by mitigating the risk that new products would depend upon "orphan" technologies. Although standard setting activities are underway, the adoption of the National ITS Architecture in 1996 will provide the framework for establishing many new ITS standards.

Near-term Institutional Challenges

The NPP identifies a number of important challenges which must be addressed and, if possible, resolved. The challenges which impact those ITS services already in the deployment phase and those which could be deployed in a three to five year time frame, are described below.

- *Lack of Market Information* - Before committing resources to marketing and deploying ITS services, many stakeholders feel they need a better understanding of the potential market for ITS. Public agencies want to know if ITS will influence traveler behavior and whether ITS might help generate revenue. Private companies need to determine the market risk involved in ITS investments and how soon investments can be recouped.

- *Uncertain public infrastructure base* - Although most ITS stakeholders believe a public ITS infrastructure will eventually be in place, they are uncertain about its nature and extent. Private companies do not want to rush to build private infrastructure, such as transportation data collection infrastructure, if public platforms will soon emerge. They also want greater assurance that their products and services will be compatible with the technologies that will ultimately dominate the public infrastructure.

- *Competition for scarce resources* - Current demands for transportation funding outstrip resources at all levels of government. Public ITS deployment investments compete with traditional projects such as highway resurfacing and reconstruction, transit fleet replacement, and other types of important capital improvements. Proposed ITS deployments must demonstrate that they will deliver significant travel efficiencies and other public benefits to win funding commitments for initial deployment as well as continuing operation and maintenance expenses.

- *Need for new skills* - Public agencies may not have the technical and engineering skills that are needed to manage the application of electronics and communications technologies to transportation services. Agencies must seek employees with appropriate technical training, provide updated training for current personnel, or use private sector technical expertise to substitute for or augment public agency skills.

- *Inexperience in partnerships* - ITS will cross city, state, and even international boundaries, and will link services which have traditionally been delivered by separate public agencies. Successful ITS deployment will depend upon the formation of new partnerships among different levels of government, across geographical lines, and even among agencies within jurisdictions. Possibly the most significant partnerships to be established in the near term are those between the public and private sectors to distribute

travel information. Reluctance to enter into new public/private partnerships is often founded on uncertainty about governmental policies, particularly those related to commercialization of traffic information and services, willingness to grant sufficient franchise rights to balance market risk, and long-term commitment.

- *Potential Loss of Privacy* - To the extent ITS services identify a specific traveler or vehicle, substantial privacy concerns are raised which could ultimately affect public acceptance of ITS. Because ITS is still in the initial stages of deployment, the ITS community can formulate and apply principles and safeguards to address privacy. Extensive consideration must be given to the circumstances under which travelers or vehicles need to be identified, how identifying information will be stored and used, who will have access to the information, and which secondary uses of the information will be permitted.

Longer-Term Institutional Challenges

- *Implications of ITS Deployment for Society*- ITS will provide many benefits for society, but attention must also be given to the effect ITS will have upon land use and communities. Care must be taken to ensure that the benefits and costs of ITS are fairly distributed. ITS services must not be available only to those who can afford high-end consumer products but must be accessible across a broad range of social, economic, and geographic groupings.

- *Concern for the Environment*- As ITS deployment matures, environmental issues must be addressed on a comprehensive basis. For example, it will be necessary to clarify appropriate processes for environmental review under the National Environmental Protection Act and the Clean Air Act Amendments. Also to refine assessments of ITS environmental impacts and promote involvement of the environmental community in project level ITS deployment decisions.

- *Improving Procurement of ITS* - Procurement issues will require substantial attention as deployment progresses and could require some degree of federal, state, or local legislative change. ITS procurements involve new, complex technologies, new partners, and multiple levels of legal requirements. There are an unusually large number and variety of public agencies involved in ITS procurements. Some specific procurement issues encountered in ITS deployment include requirements pertaining to competitive bidding, organizational conflicts of interest, bonding, treatment of intellectual property, and cost accounting and audit, as well as project uncertainties resulting from the procurement process.

- *Managing Liability Risks* - Private ITS developers have expressed the view that while motor vehicle drivers presently bear the burden of the cost of automobile accidents, ITS user services which begin to exercise more vehicle control may shift liability to developers and operators of these services. The perceived vulnerability to lawsuits has resulted in calls for techniques to manage liability risk in certain ITS deployments.

While the US DOT, ITS America, academic institutions, and many other members of the ITS community have made significant progress in identifying and researching nontechnical barriers to ITS development and operational testing, much remains to be done. Nontechnical considerations may eventually present more demanding challenges to sustained and widespread expansion of ITS user services. The very nature of ITS deployment presumes fundamental changes in the institutional aspects of how transportation business has been conducted for many years.

V. WORKING TOWARDS ITS DEPLOYMENT

There is a clear national interest in realizing the benefits of enhanced transportation management, traveler services, safety, productivity, and in establishing the U.S. ITS market early so as to gain a competitive global advantage for the domestic ITS industry. The NPP establishes a vision of what can be accomplished in ITS deployment for the near future and explores the implications of different public and private deployment roles. The following section summarizes the NPP recommendations for roles and activities for the private sector, state and local governments, the US DOT, and ITS America in support of the continuing deployment of ITS.

State and Local Government

The role of state and local governments is to determine the needs of their communities and to organize funding, develop, and execute those projects which address their transportation needs. In that sense, state and local governments will likely initiate ITS infrastructure related projects, which may also involve private sector and the federal government participation. It is essential that state/local governments become aware of how ITS can be used to address their transportation needs, and then make short and long-range plans for the deployment of ITS. State and local governments should be encouraged to work closely with the US DOT, the private sector, and ITS America to coordinate deployments and achieve national compatibility.

The Private Sector

The primary role of the private sector is to develop and commercialize ITS products and services for consumers, industry, and the public sector. To fulfill this role, the private sector will invest and engage in a variety of activities, including research and development, market studies, product testing, and system evaluations. The private sector actions will be based on feasibility, marketability, and levels of acceptable risk. The private sector may take risks in deploying ITS products in advance of a well established market.

Public sector confidence and commitment to deploying the basic infrastructure to support in-vehicle, traveler, and other end-user information products is vital in encouraging early private sector investment. The public sector role must be vigorous enough to stimulate private sector participation, but not so aggressive as to preempt private sector involvement. Close cooperation between the private and public sectors is indispensable for achieving this balance.

The US DOT

The role of the US DOT is to facilitate the deployment of ITS information and communications infrastructure and stimulate private sector involvement and investment. The US DOT may, for example, facilitate the development of the communications and information infrastructure needed to deliver many ITS services by facilitating public and private institutional relationships; or supporting the development and coordination of travel and transportation management data bases; and by helping to fund the design, development, and deployment of ITS. The US DOT should continue to invest in long-term research, such as automated highway systems.

The US DOT should employ incentives rather than regulatory mandates to achieve their objectives. The role of the private sector as partners and as infrastructure providers should be further developed. Where appropriate, federal funds should be used to enhance the development and deployment of ITS infrastructure. The use of private funds should be cultivated, or perhaps required, as part of the Federal-aid matching funds.

ITS America Role

The ITS community recognizes that ITS will be most effectively developed and deployed through a partnership of the public, private and academic sectors. ITS America is the embodiment of this partnership. It has a vital role in establishing cooperative working relationships and in'promoting a national ITS program.

ITS America brings new interests and constituencies into the ITS deployment process, expanding ITS involvement through technical committees and state chapters, disseminating information, and building international relationships. ITS America plays a major role in guiding and building consensus for the national ITS architecture and for coordinating the development of standards and protocols. It plays an important role in building support for and awareness of ITS through its outreach program. ITS America's involvement in consensus building has focused attention on technical and non-technical issues and in the promotion of intermodalism. ITS America is the vehicle through which the members of the ITS community can exchange ideas and concerns.

The recommendations and issues in the NPP are presented for consideration and further discussion by the ITS community. Strategies for deployment and effective involvement of the participants must be implemented. A consensus on how ITS deployment should proceed will speed the realization of the benefits offered by ITS to travelers and transportation users.

ACKNOWLEDGEMENTS

A substantial number of individuals contributed this document. The members of the ITS America Planning Committee, participating US DOT officials, and the Joint Writing team are listed with their affiliations below. The names and organizations of over 200 individuals who reviewed and commented on one or more drafts of the Plan are listed in Appendix A.

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Final Technical Memorandum

Guidelines for State ITS/CVO Business Plans

prepared for

Federal Highway Administration

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US Deportment
of Transportation
Federal Highway Administration

February 1997

Technical Report Documentation Page

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.

4. Title and Subtitle	5. Report Date
Guidelines for State ITS/CVO Business Plans	
	6. Performing Organization Code
7. Author(s)	8. Performing Organization Report No.
Lance R. Grenzeback, Carol G. Colman, John G. Kaliski, and Molly K. Markert	6039.01
9. Performing Organization Name and Address	10. Work Unit No. (TRAIS)
Cambridge Systematics, Inc.	3B4A
150 Cambridge Park Drive	11. Contract or Grant No.
Suite 4000	DTFH61-92-C-00021
Cambridge, MA 02140	13. Type of Report and Period Covered
12. Sponsoring Agency Name and Address	
Federal Highway Administration	
Turner-Fairbank Research Center	Technical Memorandum 1996
6300 Georgetown Pike, HSR-10	14. Sponsoring Agency Code
McLean, VA 22101-2296	

15. Supplementary Notes

Contracting Officer's Technical Representative Michael Freitas, HSR-10

16. Abstract

This technical memorandum was developed as part of the study, "Systems Planning for Automated Commercial Vehicle Licensing and Permitting Systems." The objective of this study was to define the requirements and develop a plan for a national program to apply Intelligent Transportation Systems (ITS) to commercial vehicle operations (CVO). A primary recommendation of this project is that the FHWA should encourage each state to develop an ITS/CVO business plan.

A state ITS/CVO business plan is a "roadmap" to a state's ITS/CVO program that defines broad goals and objectives, as well as specific projects, milestones, responsibilities, and funding levels. The business plan emphasizes the application of ITS technologies to improve state CVO processes and procedures.

The objectives of ITS/CVO business plans are to: provide a framework for identifying problems in current CVO processes and opportunities for applying ITS to address these problems; achieve consensus on the ITS/CVO projects and policies among state agencies and the motor carrier industry; allow ITS/CVO projects to be developed and deployed in a coordinated manner; and serve as a concise program summary that may be distributed to state agencies, legislators, the general public, and other states.

This technical memorandum provides a guide to developing a state ITS/CVO business plan. It also reviews the status and results of state ITS/CVO business planning to date. The report is intended for a state department of transportation, or any other agency that has the overall responsibility for developing the state's ITS/CVO program. It also will assist representatives from the FHWA Office of Motor Carriers who are assigned to support state agencies in developing the ITS/CVO business plans.

17. Key Words	18. Distribution Statement
intelligent transportation systems, commercial vehicle Operations, motor carrier industry, commercial vehicle regulation, fleet management, safety inspections, business plan, nainstreaming	No restrictions. This document is available to the public through the National Technical Information Service, Springfield, VA 22161.

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price
Unclassified	Unclassified	65	

Final Technical Memorandum

Guidelines for State ITS/CVO Business Plans

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February 1997

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1. Introduction

A state ITS/CVO Business Plan is a "roadmap" to a state's Commercial Vehicle Operations (CVO) program that defines broad goals and objectives, as well as specific projects, milestones, responsibilities, and funding levels. The Business Plan emphasizes the application of Intelligent Transportation Systems (ITS) technologies to improve state CVO processes and procedures.

This guide reviews the status and results of state ITS/CVO business planning to date. It also provides a guide to developing a state ITS/CVO Business Plan for state and Federal officials.

This report is intended for state agencies that are responsible for developing a state's CVO program. It also will assist representatives from the Federal Highway Administration (FHWA) Office of Motor Carriers who are assigned to support state agencies in developing ITS/CVO Business Plans. In addition, it will educate the private sector, elected officials, and the general public who wishes to know more about the purpose and content of state ITS/CVO Business Plans.

This report is organized as follows:

- Section 2.0 provides a background to ITS/CVO and Business Plan development;
- Section 3.0 explains the methodology and approach of this report;
- Section 4.0 explains the process that a state should undertake to develop an ITS/CVO Business Plan;
- Section 5.0 includes an outline for and a prototype of an ITS/CVO Business Plan; and
- Section 6.0 summarizes the conclusions and recommendations of this report.
- Appendix A includes the bibliography for this report. Appendixes B and C include interview and survey guides that may be used to collect data for the Business Plan.

2. Background

This section provides a background to ITS/CVO Business Plan development. It explains ITS and CVO, various approaches to improve CVO activities, and the purpose of an ITS/CVO Business Plan.

CVO AND ITS

Commercial vehicle operations involve approximately three dozen areas of interaction between public agencies and motor carriers. They include functions such as truck registration, size and weight enforcement, vehicle maintenance and inspection, and fleet routing and dispatching. These transactions are critical for highway safety, carrier productivity, and revenue collections.

ITS apply advanced and emerging technologies in such fields as information processing, communications, control, and electronics to address surface transportation needs. **ITS/CVO are** the application of ITS technologies to CVO to streamline administrative procedures and improve the safety and productivity of trucking (see Figure 1).

The objectives of the national ITS/CVO program are to:

- Improve highway safety;
- Streamline the administration of motor carrier credentials and taxation;
- Reduce congestion costs for motor carriers; and
- Ensure regulatory compliance by and equitable treatment of motor carriers.

ITS/CVO services offer a range of benefits to the states, the Federal government, the private sector, and the general public. ITS/CVO will:

- Reduce the frequency and severity of commercial vehicle accidents;
- Reduce administrative costs for regulatory agencies and motor carriers;
- Reduce congestion and improve efficiency at weigh stations and international border crossings; and
- Improve economic competitiveness by reducing the cost of motor carrier transportation and regulation.

ITS/CVO include the following types of activities:

- Automating existing procedures and operations. Agencies and carriers are purchasing computer hardware and software, communications systems, electronic sensors, and other

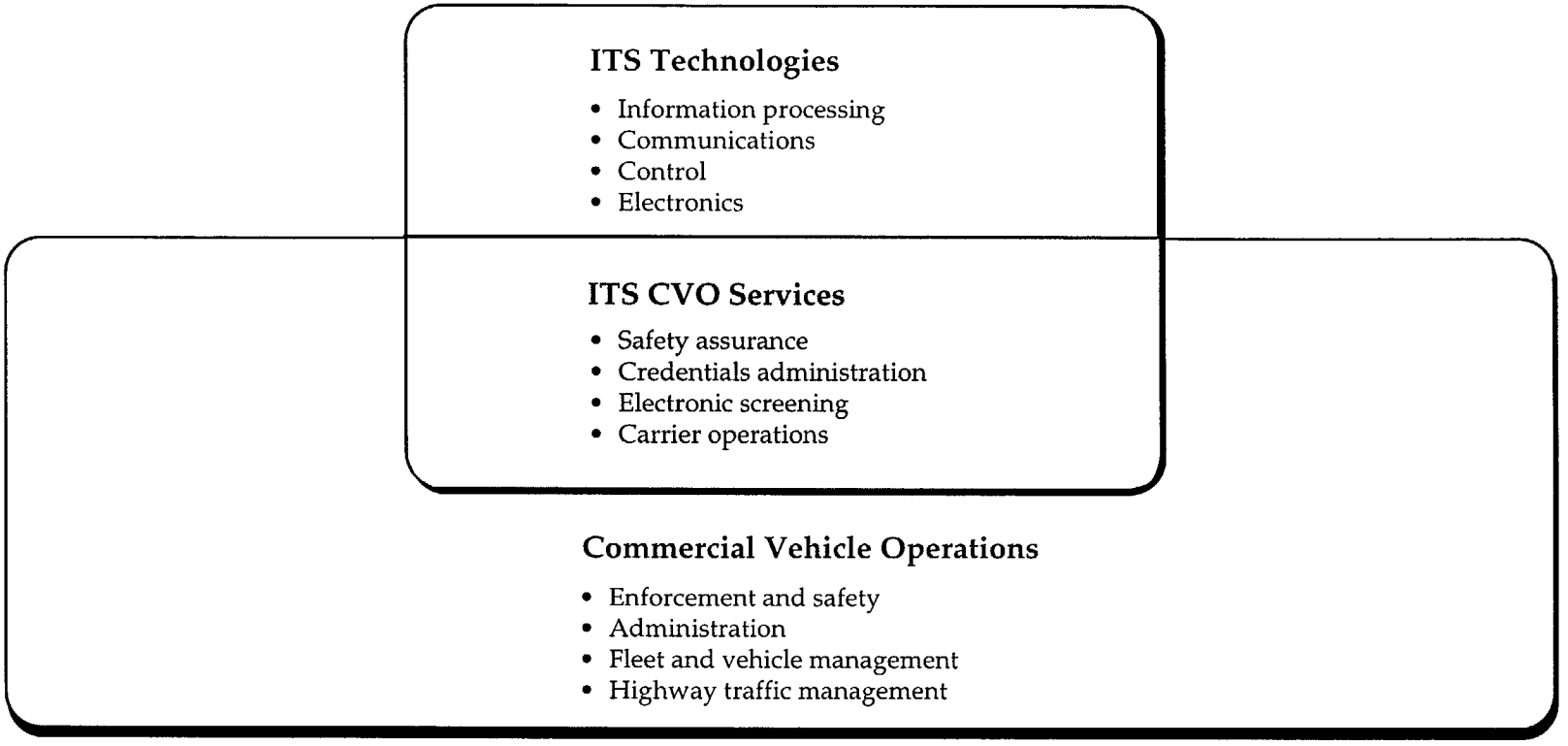


Figure 1. ITS and CVO.

instruments to automate their existing recordkeeping, inspection, and communication procedures.

- **Networking information systems.** The deployment of electronic data interchange and electronic funds transfer capabilities enables agencies and carriers to share information and transfer money. The development of linked databases and networks of information systems will enhance the systems now operated independently by agencies and carriers.

- **Changing the way that agencies and motor carriers do business.** Over time, the automation and networking of information systems will encourage changes in traditional processes and roles to reflect the changing needs of the intermodal transportation system. A commonly cited goal is "transparent borders," which refers to enabling safe and legal carriers to travel through multiple states or across international borders, with no more than a single stop. Another common goal is "one-stop shopping," which refers to enabling carriers to obtain permits for multiple states through a single source, either physically through a single office or electronically through the use of information systems and software.

The national ITS/CVO program comprises dozens of initiatives covering multiple functions. These initiatives represent the efforts of individual states, consortia of states, the Federal government, individual motor carriers, and industry associations. The ITS/CVO program is developing capabilities in four broad areas (see Figure 2):

- **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 regulation. 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 credential information. These include the automated screening and clearance of commercial vehicles at weigh stations and international borders.

- **Carrier operations.** Programs and services designed to reduce congestion and manage the flow **of** commercial vehicle traffic. These include travel advisory services and hazardous materials incident response services. The private sector is taking the lead in the deployment of fleet and vehicle management technologies that improve motor carrier productivity.

The Commercial Vehicle Information Systems and Networks (CVISN) initiative will provide a high-level infrastructure to link these projects and information systems, including common standards for electronic communication among participating agencies and carriers. The Mainstreaming initiative is developing an organizational infrastructure for ITS/CVO deployment, including the creation of state and regional ITS/CVO Business Plans and policy forums.

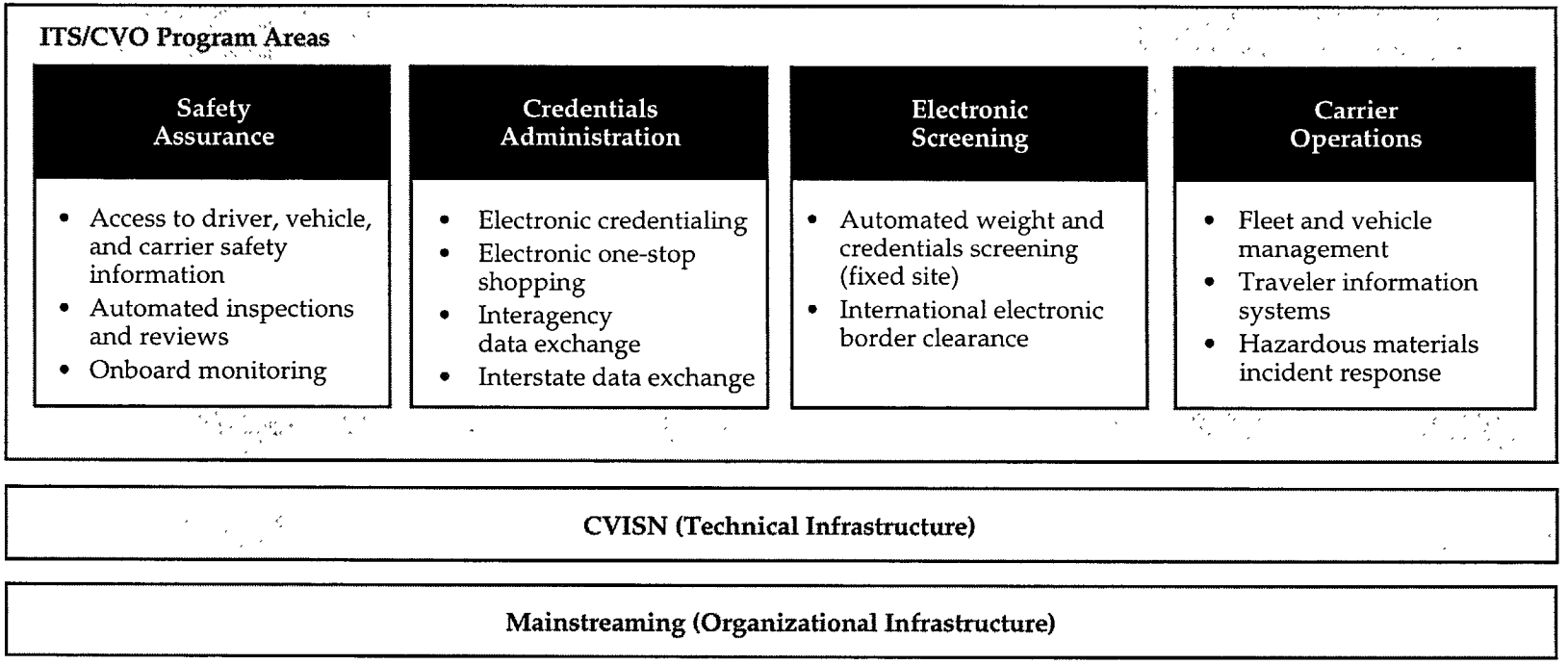


Figure 2. National ITS/CVO program areas.

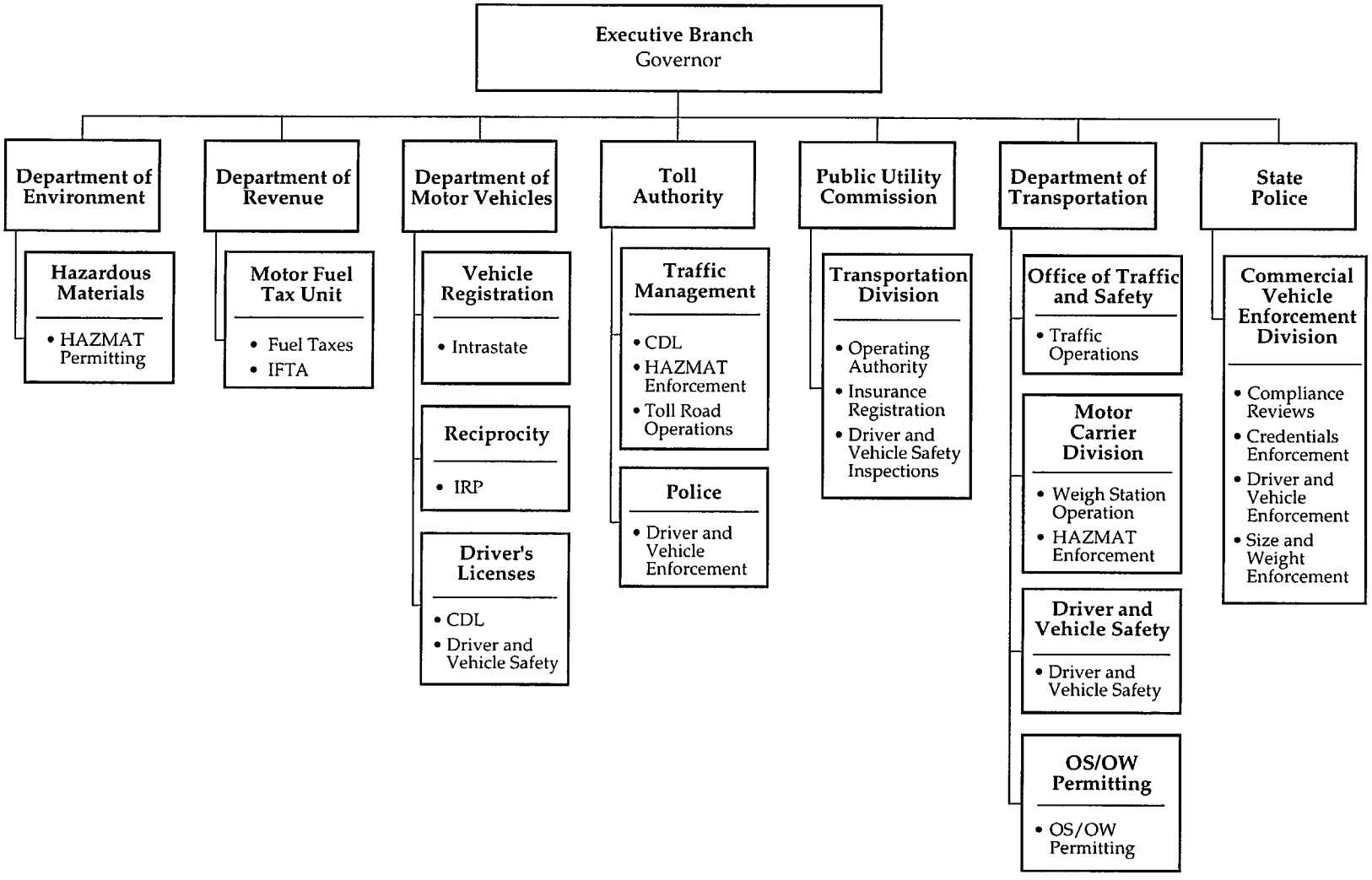


Figure 3. State organization of motor carrier regulatory responsibilities (example).

PURPOSE OF BUSINESS PLANS

The purpose of developing an ITS/CVO Business Plan is to ensure support for coordinated ITS/CVO deployment in a state. A well-developed Business Plan will:

- Provide a framework for identifying problems in current CVO procedures and oppourtunities to address those problems. The Business Plans may include both the application of ITS technologies, as well as non-technical solutions such as process reengineering.

- Achieve consensus on the implementation of changes in CVO and the improvement of communication among and between state agencies and the motor vehicle industry. The typical state allocates responsibility for motor carrier regulation among five or six agencies (see Figure 3). Many CVO regulatory programs operate in virtual isolation from one another; the lack of coordination and interaction leads to inefficiency and ineffectiveness. An effective ITS/CVO Business Plan requires participation and support from all relevant agencies. In addition, a CVO Business Plan can help improve cooperation among state agencies and the motor carrier industry.

- Allow ITS/CVO to be developed and deployed in a coordinated manner to conserve resources and to ensure that "balkanized" CVO regulatory programs are not replaced by equally uncoordinated ITS/CVO programs. There are numerous ITS/CVO projects at the local, regional, and national levels in various stages of development. Nationally, more than 50 projects are in some stage of development or deployment.

- Serve as a concise program summary that may be distributed to state agencies, legislators, the general public, and other states.

The FHWA is providing funding to the states through the ITS/CVO Mainstreaming initiative to support the development of ITS/CVO Business Plans. The FHWA views the development of an ITS/CVO Business Plan as an opportunity to formalize the CVO planning process, promote the development of public/private partnerships, and provide justification for ITS/CVO funding in state budgets.

3. Approach

This section explains the methodology used to develop this report. The research included the following work steps:

- Collection and review of business plans and relevant literature at the state, regional, and national level in CVO, ITS, and other transportation areas;
- Identification of "best practices" among state ITS/CVO programs;
- Analysis of the results of the literature review and best practices search;
- Development of a model business plan; and
- Development of findings and conclusions based on this research effort.

A complete list of the documents that were reviewed for this project is included in Appendix A. The literature includes state and regional ITS/CVO Business Plans; the National *ITS/CVO Program;* and literature on business plan development" Only three individual states – Minnesota, Missouri, and Oregon – have developed ITS/CVO Business Plans to date. Other states have developed detailed project plans for CVISN implementation (e.g., Maryland and Virginia) or credentials process reengineering (e.g., Colorado and Minnesota). At least eight multistate consortia have developed ITS/CVO Business Plans, most often as part of institutional issues studies that identified the barriers to ITS/CVO deployment (see Table 1). Table 2 lists major existing regional ITS/CVO Business Plans, identifying the year each plan was produced and the status of the document when it was reviewed for this project.

With the availability of Federal ITS/CVO Mainstreaming funds, more states will develop ITS/CVO Business Plans in the coming year.

Table 1. Selected regional ITS/CVO business plans.

Region	States
Advantage CVO Partnership	Alabama, Florida, Georgia, Indiana, Kentucky, Michigan, Mississippi, North Carolina, Ohio, South Carolina, Tennessee, and Virginia
COVE	Arizona, Arkansas, Colorado, Louisiana, New Mexico, Oklahoma, and Texas
Eastern States	Delaware, Maryland, New Jersey, New York, Pennsylvania, Virginia, West Virginia, and District of Columbia
I-95 Corridor Coalition	Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and District of Columbia
Kansas-Missouri	Kansas and Missouri
Multijurisdictional Automated Preclearance System	Idaho, Oregon, Utah, and Washington
Multi-State (Southeast)	Alabama, Florida, Georgia, Kentucky, Michigan, Mississippi, North Carolina, South Carolina, Tennessee, and Virginia
Northern New England	Maine, New Hampshire, and Vermont

Table 2. Characteristics of selected ITS/CVO business and project plans.

	Year Developed	Status
State lTS/CVO Business Plans		
Minnesota Guidestar	1995	Final report
Missouri	1996	Final report
Oregon Strategic Plan IVHS/CVO	1993	Final report
State CVLSN Project Plans		
Maryland	1996	Draft plan
Virginia	1996	Draft plan
State Re-engineering Plans		
Minnesota Guidestar	1996	Final report
WHEELS Re-engineering (Colorado)	1995	Final report
Regional ITS/CVO Business Plan		
Advantage CVO Partnership	1996	Draft
COVE CVO Implementation Plan (produced as part of institutional issues study)	1994	Final report
Eastern States Regional Business Plan (produced as part of institutional issues study)	1995	Final report
I-95 Corridor Coalition CVO Program	1996	Program endorsed by Executive Board
Kansas-Missouri ITS/CVO Implementation Plan (produced as part of institutional issues study)	1994	Final report
Multi-State Regional Business Plan (produced as part of institutional issues study)	1993	Final report
Multijurisdictional Automated Preclearance System	1997	Under development
Northern New England ITS/CVO Business Plan (produced as part of institutional issues study)	1995	Final report

4. The Process of Developing an ITS/CVO Business Plan

This section recommends a process for developing a state ITS/CVO Business Plan. It discusses the responsibilities involved in developing the Plan, and presents an overall approach, organized into three phases: project initiation, Business Plan development, and Business Plan implementation.

PROJECT INITIATION

An ITS/CVO Business Plan should be developed by a Business Plan Manager and a Steering Committee. The Business Plan Manager is responsible for organizing and driving the development of the Business Plan. The individual or individuals who led the request for Federal ITS/CVO Mainstreaming funds most likely are the ones to initiate the business planning process. Due to the complex nature of most states' motor carrier regulations, the Business Plan Manager may choose to have an outside consultant assist with the development of a comprehensive Business Plan.

Most existing ITS/CVO Business Plans have been developed under the guidance of a steering committee or working group. The primary responsibilities of the Steering Committee are to:

- Develop the Business Plan's vision, guiding principles, goals, and objectives;
- Agree upon a work plan for the Business Plan Manager;
- Designate representatives from the state CVO agencies and the motor carrier industry to participate in the development of the ITS/CVO Business Plan; and
- Review, plan, and approve each phase of the business planning process.

The Business Plan Manager should establish the Steering Committee and serve as a committee member. The Committee should include managers from the full range of state agencies with CVO responsibilities, including departments of transportation, revenue, motor vehicles, public safety, and environmental protection; public utility commissions; toll authorities; and the state police. The state motor carrier industry should be represented by the state motor truck or bus association, as well as by individual carriers where possible. The composition of steering committees for existing ITS/CVO Business Plans is included in Table 3.

FHWA Role

The FHWA should play an active role in the development and implementation of state ITS/CVO Business Plans, both through participation in Steering Committee meetings and through the review of documents. This level of participation will help ensure that the individual state Business Plans are consistent with the direction of the national ITS/CVO program.

Table 3. Composition of selected ITS/CVO Business Plan steering committees.

	DOT	DMV	DOR	State Police/ Public Safety	PUC PSC	Public Works	Toll Authority	FHWA	Motor Carriers	Truck or Bus Association	Other
State ITS/CVO Business Plans											
Minnesota	T			T				T	T	T	
Oregon	T				T					T	
State CVISN Project Plans											
Maryland CVISN	T		T	T	T			T	T	T	T[1]
Virginia CVISN	T	T		T				T	T	T	
State Re-engineering Plan											
Colorado	T		T								
Regional ITS/CVO Business Plans											
COVE	T		T					T		T	
Eastern States	T	T				T		T		T	
I-95 Corridor Coalition	T						T	T		T	
Kansas and Missouri	T		T	T				T	T	T	T[2]
Multi-State	T							T	T	T	
Northern New England	T	T	T	T		T	T	T	T	T	

T Indicates that a department or agency has at least one representative on the committee.

1 Department of the Environment
2 Department of Economic Development

The FHWA should provide technical assistance to the states in the development of ITS/CVO Business Plans. The FHWA may:

- Offer guidance from staff of the Office of Motor Carriers (OMC) division offices;
- Continue to fund the appointment of regional ITS/CVO "champions" to work with consortia of states, both individually and collectively, on ITS/CVO planning and deployment; and
- Identify "best practices" in state ITS/CVO business planning, and make reports available to the states.

BUSINESS PLAN DEVELOPMENT

The development of a Business Plan typically involves four steps: data collection, data analysis, project definition, and report preparation. The state's CVO stakeholders must participate in all phases of Business Plan development.

As a rule, the ITS/CVO Business Plan is created in an iterative fashion. Figure 4 shows the general flow of work involved in preparing the Plan. The data collection effort may consist of interviews, surveys, focus groups, and/or workshops involving representatives of the motor carrier industry and CVO agencies. Current practices within the state's CVO program should be reviewed, as well as "best practices" from other states. The Business Plan Manager, Steering Committee members, and any outside consultants will gather data, perform analysis, and prepare draft conclusions and recommendations for review by CVO stakeholders. As a result of this review, additional data collection and analysis may be required to improve and refine conclusions and recommendations. This iterative process should continue so long as meaningful improvements to the Plan occur and resources permit.

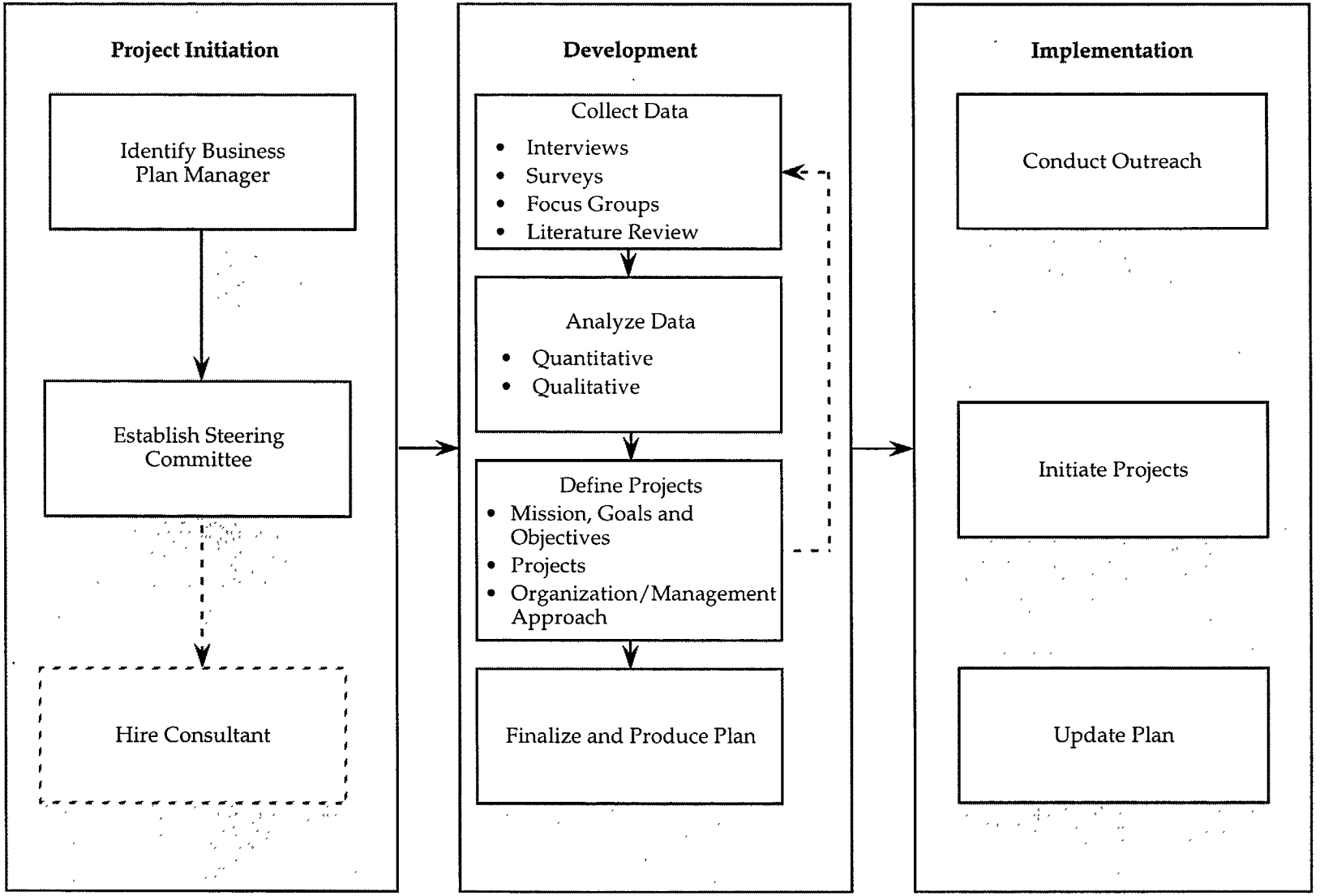
The effort required to produce a Business Plan depends on the level of investment that each state wishes to make and how quickly the various stakeholders are able to reach consensus, Each state will invest in its Business Plan according to the priority accorded to ITS/CVO. From initiation to completion, the development of an in-depth Business Plan will require 6 to 18 months.

The following tasks represent the work steps that are involved in developing a typical Business Plan. The specific activities included in each task will vary based on each state's unique political and economic environment.

Task 1. Define Strategic View

The Steering Committee should define a preliminary strategic view for the Business Plan. The strategic view includes the following elements:

- **Mission Statement:** Overall, long-range intention for the state's CVO program;
- **Guiding Principles:** Underlying assumptions that guide the development of the ITS/CVO Business Plan;



Note: Dotted lines represent optional steps.

Figure 4. ITS/CVO business plan development process.

- Goals: Broad achievements toward which the ITS/CVO program is directed; and
- Objectives: Specific components of the goals.

Examples of the four components are included in Section 5 of this report. The strategic view will be refined later in the business planning process, but the Steering Committee should reach consensus about the strategic view early in the process to provide a context for future work.

Task 2. Collect Data on CVO Issues and Opportunities

Once the Steering Committee has defined a preliminary strategic view, a core working group, including the Business Plan Manager, agency staff, and an outside consultant (as appropriate) can begin the data collection process. The core working group should identify the types of data that will be required, the purpose of the data, where the data can be collected, and how the results should be documented. The Plan should draw on three major data sources: a review of the existing state CVO program, a review of business plans from other states and regions, and input from public and private sector CVO stakeholders.

State CVO Program

A clear understanding of the current state CVO program is required to identify any bottlenecks or missing links in the regulatory processes. The review of the CVO program should explain current regulatory procedures, the levels of ITS/CVO deployment, and the responsibilities of all state agencies involved in motor carrier administration and safety enforcement. If the current state CVO program has not been documented for an ITS/CVO institutional issues study, interviews with key CVO agency personnel may be necessary to understand the overall program.

"Best Practices" from Literature Review

A literature review that includes other state and regional ITS/CVO business plans may be conducted to assess the "best practices" among CVO programs, and to ensure coordination of CVO activities at the state, regional, and national levels. The literature review should include:

- Documentation of operational tests, particularly within the individual state;
- The state or region's ITS/CVO institutional issues study;
- ITS/CVO business plans from other states, including other states in the region and plans with a high degree of innovation or success in implementation;
- The regional ITS/CVO business plan that includes the individual state, if such a plan has been developed;
- The *National ITS/CVO Program,* which is available from the FHWA; and
- Other related transportation business plans and studies.

A major goal of the literature review is to ensure that each state Business Plan is consistent with the general goals and approach of the national ITS/CVO program and the appropriate regional business plans (see Figure 5).

CVO Stakeholder Input from Surveys, Interviews, Workshops, and Focus Groups

Surveys, interviews, workshops, and focus groups can help to assess existing CVO administrative and enforcement procedures and to solicit suggestions for improvement. The individuals who participate in these forums should be actively involved in CVO and represent a wide range of CVO interests, including both public sector agencies and the motor carrier industry.

If resources are minimal, written surveys may be the best method of obtaining some level of input from CVO stakeholders who are not represented on the Steering Committee. Surveys can provide feedback from a wide range of CVO stakeholders with a relatively quick turnaround time.

Interviews conducted with one or two individuals at a time provide an opportunity to collect more unstructured and detailed information than is possible from a workshop or survey. Well-structured interviews will ensure consistency and high-quality results. Appendixes B and C suggest guidelines for conducting these interviews.

The synergistic nature of workshops and focus groups permits a more interactive treatment of a topic than if the same people addressed the topic individually. Workshops and focus groups are especially useful when participants focus on project ideas and refine the preliminary Business Plan. Workshops can be a one-time event or a series of meetings that emphasize information exchange. Focus groups provide a comprehensive review of and response to the data and analysis and are less time-consuming than conducting individual interviews.

The data gathered through the surveys, interviews, focus groups, and workshops should be documented and categorized into the following areas:

- Current problems in CVO for both motor carriers and the state;
- Opportunities to resolve these problems, particularly through the application of ITS technology;
- Technical and institutional barriers to ITS/CVO deployment; and
- Strategies to overcome these barriers.

The more extensive the data collection effort is, the more comprehensive the final Business Plan will be. The data collection methods mentioned here can be used in whatever combination and sequence that the Steering Committee deems to be appropriate. The Business Plan will benefit by having input from a broad cross-section of motor carriers and state agencies. Not only will the Business Plan be enriched by the range of feedback, but stakeholder participation will create a shared sense of ownership for the Business Plan among agencies and the motor carrier industry.

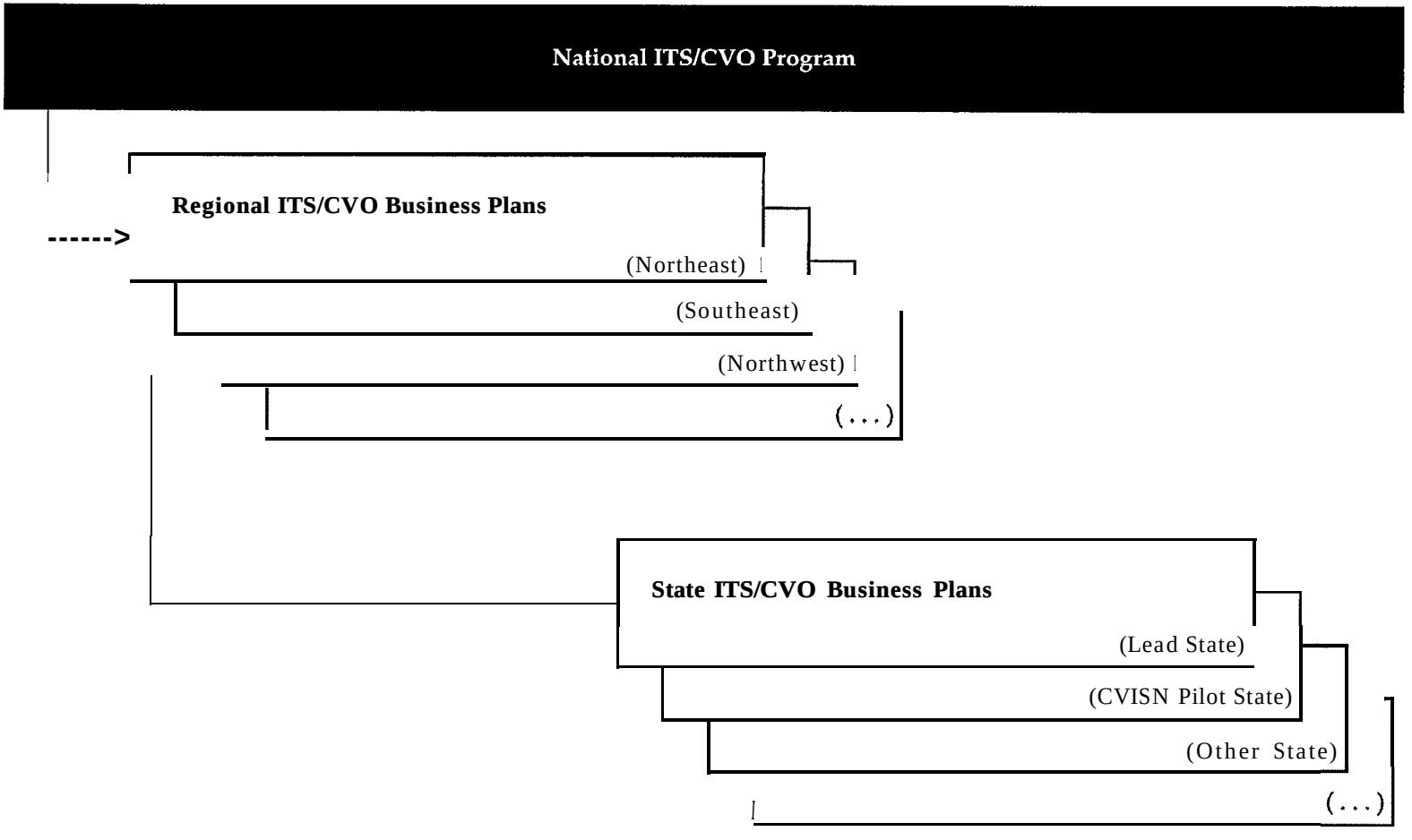


Figure 5. ITS/CVO business plans.

Case Study: Minnesota

Minnesota successfully used multiple data collection methods to develop its ITS/CVO Business Plan. The process used to develop the Business Plan is shown in Figure 6. Following an initial kickoff meeting, in-person interviews were conducted with key stakeholders. These interviews were supplemented by telephone interviews with additional public and private officials, including a limited number of representative organizations from neighboring states.

The consultant then conducted two one-day focus groups to test the interview findings about the desirable components of the ITS/CVO Business Plan, and to provide an additional forum for gathering information on the interests of the CVO community. The focus groups, consisting of middle management and operational personnel, discussed ITS/CVO applications and identified differences in interests and priorities between operators of large fleets and operators of small fleet.

Subsequently, A workshop was held to review and validate the CVO interests and priorities identified through the interviews and focus groups. The workshop brought together participants from the **interview** and focus groups as well as other relevant parties identified during these activities. The workshop produced a preliminary ITS/CVO program scope that served a **the basis** of **the Business Plan.**

After the consultant developed the draft Business Plan, which incorporated the findings of the interviews, focus groups, and initial workshop, the state's Project Manager reviewed the Plan and the recommended changes. A revised draft Business Plan was reviewed and discussed in a second one-day workshop. Using the same participants as the first workshop, the Business Plan Manager and the consultant were able to obtain input from the key stakeholders on the content of the Plan.

Based on the results of the second workshop and further consultation with the Business Plan Manager, a final Business Plan was submitted by the consultant to Minnesota. This Business Plan addresses all of the major issues and concerns expressed by the state's public and private CVO stakeholders.

Task 3. Analyze Data

The next step in the ITS/CVO business planning process is data analysis. Various techniques may be used to conduct the analysis, including the following:

- **Focus groups or workshops** involving public and private CVO representatives not serving on the Steering Committee. These individuals can review the data collected and offer feedback to the Steering Committee.

- **Process maps** of regulatory procedures. Process mapping, a systematic method of documenting and understanding current regulatory procedures, can provide a benchmark for analyzing potential improvements in CVO processes. Process maps indicate the sequence of decisions and events that occur in a specific procedure. Process maps of the current state CVO program should be developed to clarify current CVO processes, highlight the weak links in regulatory and operational procedures, and suggest opportunities for the application of ITS/CVO technologies (see Figure 7).

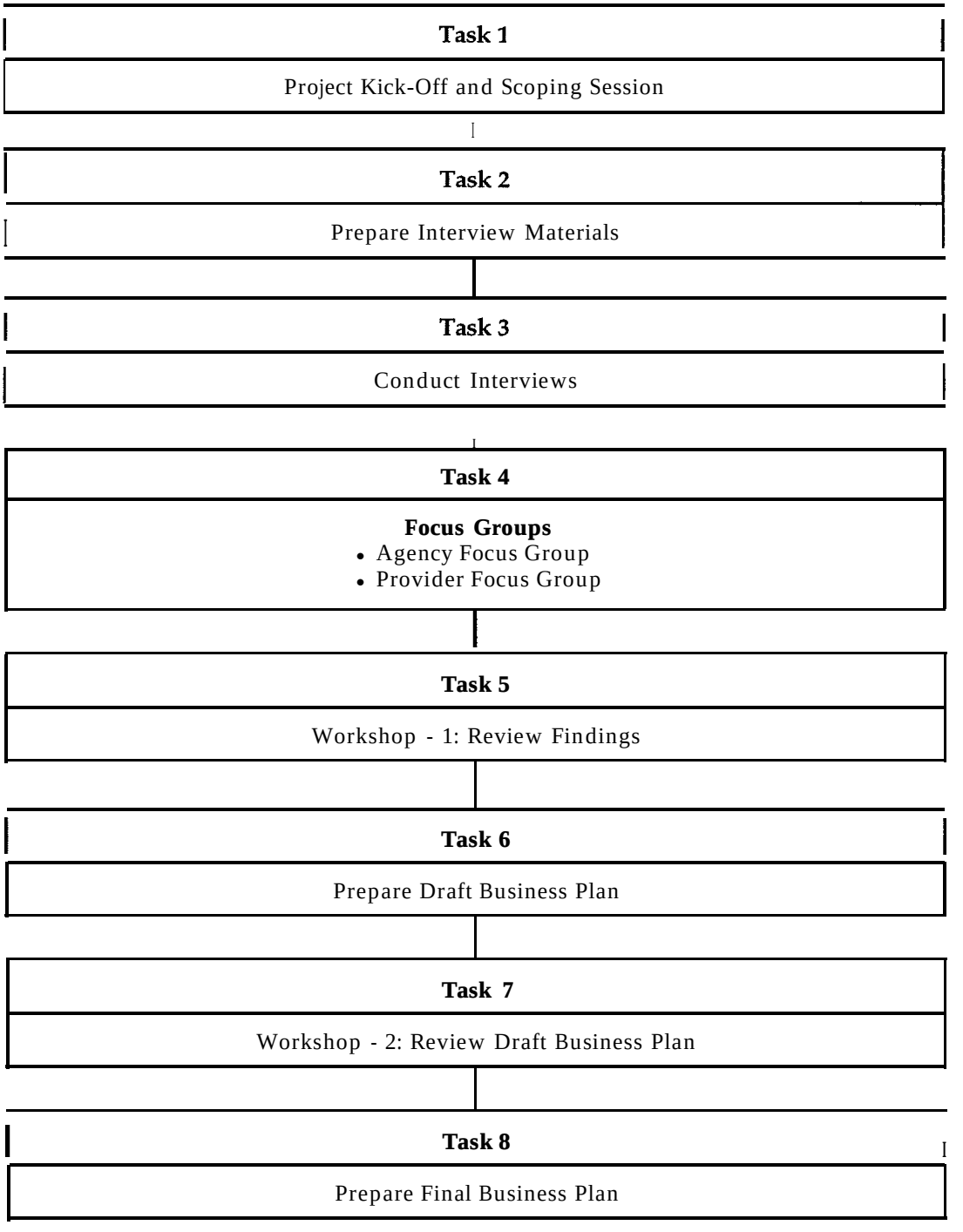


Figure 6. Process for developing the Minnesota CVO Business Plan.

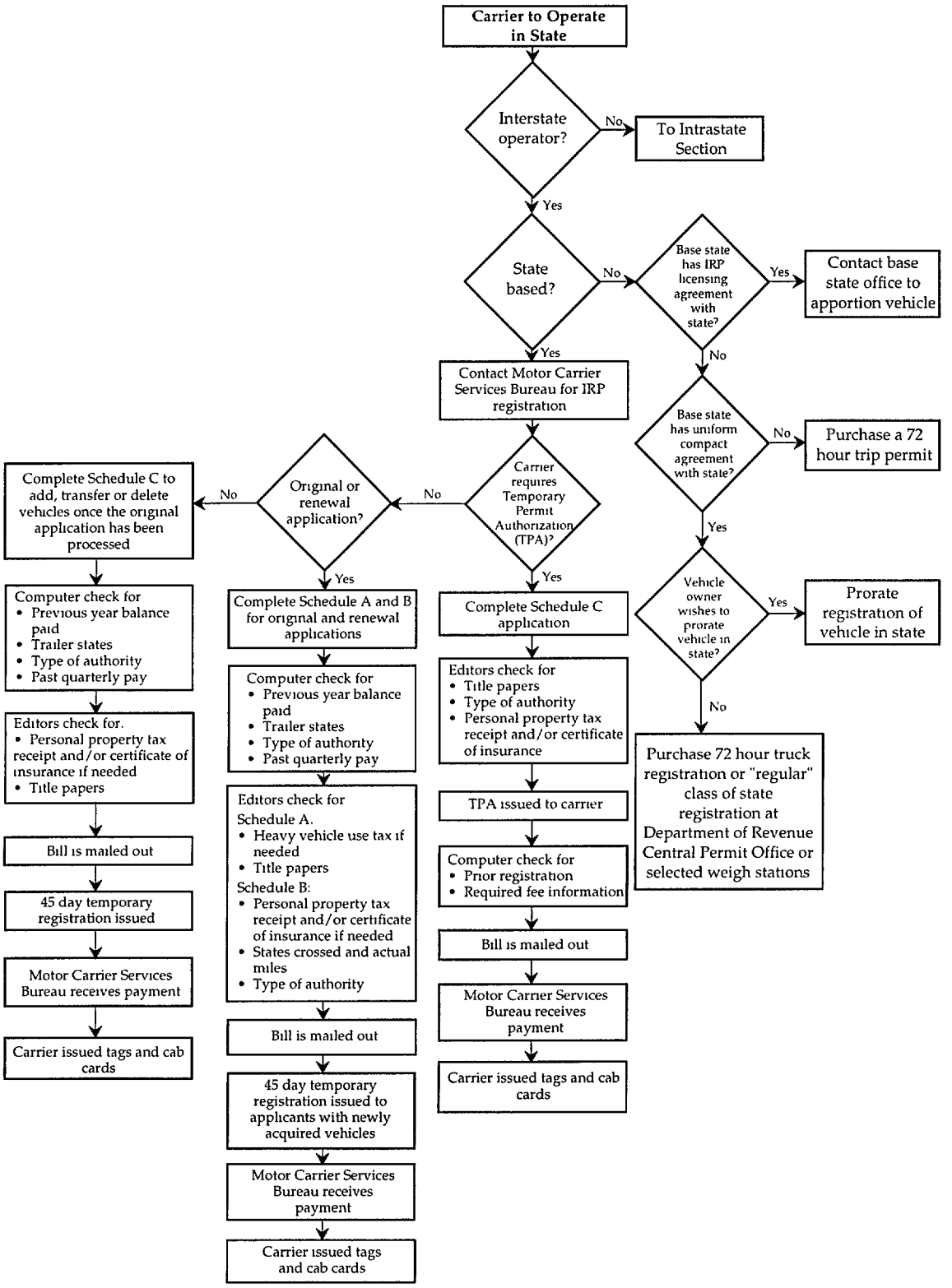


Figure 7. State process for interstate registration/IRP (sample).

- **Matrices** matching the CVO functional responsibilities to the appropriate departments and agencies. Such matrices help to identify functions for which multiple agencies claim responsibility.

- **Benefit/cost analyses.** These analyses may clarify the costs of existing CVO administrative and enforcement processes, estimate the potential benefits of lTS/CVO deployment to state agencies or to the motor carrier industry, and project deployment costs in terms of capital, operating, and maintenance expenditures. The benefits and costs may be estimated either qualitatively or, if data permit, quantitatively. The FHWA has funded research by the ATA Foundation and the National Governors' Association on the costs and benefits of ITS/CVO services for the motor carrier industry and the states, respectively.

Data analysis techniques that have been used in existing ITS/CVO Business Plans are included in Table 4.

The states may identify further methods of analysis appropriate to their business planning process. The Steering Committee should review the results of the data analysis and provide guidance for revisions, as needed. The strategic view should be revised or refined based on the data analysis.

Task 4. Define Projects

At its core, the state lTS/CVO Business Plan is a summary of current and planned projects to develop, test, and deploy specific lTS/CVO products and services. Once the data collection and analysis is complete and the program's mission, goals, and objectives have been refined, the efforts of the Business Plan Manager and Steering Committee can shift to defining the plan's component projects. The Business Plan both should document existing ITS/CVO projects in the state and identify projects for future implementation. These projects should include both national and regional initiatives in which the state will participate, as well as state-specific projects.

For each project, the Business Plan should define the following:

- Goals and objectives – Why conduct this project? How does it contribute to the overall goals and objectives of the state ITS/CVO program?

- Outcome – What is the intended results of this project? What services will it provide?

- Project location – Where will this project take place?

- Technical approach – How will the services be delivered?

- Organization and management approach – Who is responsible for delivering these services and managing this project?

- Schedule and milestones – When will this project be completed?

- Funding approach – How much funding is required? Who is responsible for funding this project?

Table 4. Techniques used in ITS/CVO Business Plan Development

	Surveys	Interviews	Workshops/ Focus Groups	Liturature Review	Process Maps	Benefit/ cost Matrixes	Analysis
State ITS/CVO Business Plan							
Minnesota		T	T				
Oregon			T	T Limited			T
State Re-engineering Plan							
Colorado			T	T Limited	T Limited		T
Regional ITS / CVO Business Plan							
COVE	T	T	T	T		T	T
Eastern States	T		T				
I-95 Corridor Coalition	T	T	T	T			
Kansas-Missouri		T	T	T	T		
Multi-State			T	T	T		
Northern New England		T	T	T	T	T	T

2 Government Processes and business practices for truck administrative regulation and enforcement were collected and documented but in the form of a process map.

The Business Plan should provide a framework to define the relationships among projects. This framework should be used to explain relationships among projects that would affect project development; identify coordination required between individual projects due to technical or resource constraints; and assign a priority to each project that will guide resource allocation decisions. It is recommended that the states use a program framework similar to that of the national ITS/CVO program, which categorizes projects into four major areas, as discussed in Section 2:

- Safety assurance;
- Credentials administration;
- Electronic screening; and
- Carrier operations.

Most ITS/CVO projects can be categorized into one of these four areas (see Figure 8). In addition, the national ITS/CVO program includes two major cross-cutting projects: the CVISN initiative, which is developing a technical infrastructure for ITS/CVO projects; and the Mainstreaming initiative, which is developing an organizational infrastructure to manage ITS/CVO deployment. Most state ITS/CVO Business Plans will include similar cross-cutting initiatives. On the technical side, these could include participation in the CVISN model deployment, or preparation for future adoption of the CVISN architecture. On the organizational side, these could include projects in the areas of outreach, training, or communication.

Figure 9 illustrates the component projects of an ITS/CVO Business Plan for a specific state. As shown, this sample Business Plan lays out specific projects in the areas of safety assurance, credentials administration, electronic screening, and carrier operations. In addition, this Business Plan includes a project to begin preliminary planning for future deployment of the CVISN infrastructure and a project to continue the state mainstreaming initiative.

Task 5. Prepare Business Plan Report

Once the Business Plan is in final form, the Business Plan Manager and/or the consultant must document the Plan in a report. Although the research during the development of the Business Plan may be extensive, the final written document should be brief and concise. Section 5 presents a suggested model for the outline and content of this report. A written summary of the interviews, surveys, focus group discussions, and workshop findings may be included. Additional detailed information and analysis may be included in appendices.

Business Plan Implementation

While the Business Plan is being written, marketing and outreach to the CVO community should begin. The purpose of marketing is to educate the CVO community about the mission and goals of the Business Plan, and secure support for the overall Plan and the individual projects. A shared sense of ownership for the Business Plan by all CVO stakeholders is critical to the Plan's success. Outreach should be extended to both state agencies and the motor carrier industry. Local motor truck associations should be involved in the outreach to the motor carrier industry.

	ITS/CVO Program					
	Goals and Objectives (Why?)	Projects (What? Where?)	Technical Approach (How?)	Organization and Management (Who?)	Schedule and Milestones (When?)	Funding (How Much? By Whom?)
Safety Assurance						
Credentials Admin.						
Electronic Screening						
Carrier Operations						

Figure 8. Framework for ITS/CVO program summary.

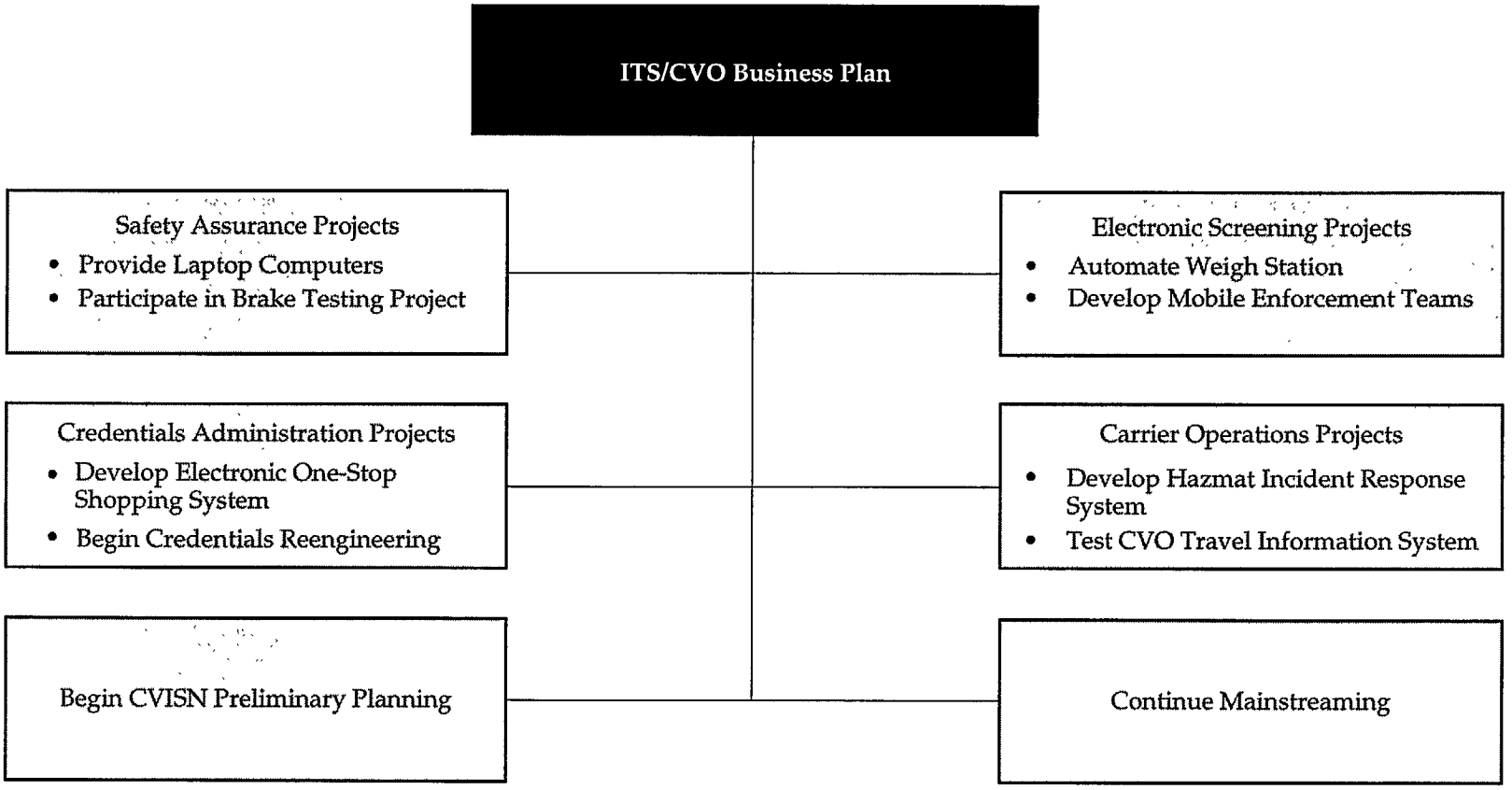


Figure 9. Business plan example – typical state.

Once the ITS/CVO Business Plan is approved, the implementation of the individual projects outlined in the Plan may begin. The Manager or Steering Committee must decide if the projects will be developed in-house or contracted to an outside consultant. If a project is to be developed internally, then the Steering Committee should assign the project to a specific agency and development should begin as scheduled in the Plan. If the project is to be contracted, the state must write and issue Requests for Partners or Requests for Proposals (RFPs) to solicit project ideas. The selection of a partner or contractor to design and implement the projects should occur in a timely manner.

Additionally, a process should be established to ensure that the Business Plan will be updated regularly. The FHWA recommends updating state ITS/CVO Business Plans at least once every three years because ITS/CVO services are still in the early stages of development. This timeframe will vary from state to state depending on a variety of factors, including the state fiscal calendar and the update of the state transportation improvement plan.

5. Content of a Model ITS/CVO Business Plan

This section offers a model for states to follow when developing an ITS/CVO Business Plan. The model is provided as a guide that should be adapted to the specific requirements of each state. An outline of the model Business Plan is included in Figure 10. A prototype ITS/CVO Business Plan also is provided to help Business Plan developers understand the level of detail that is appropriate. In this prototype plan:

- The shaded box at the left annotates each section; and
- The text to the right is an example of how the section might begin, or is written in full in the case of a few simple topics.

Model ITS/CVO Business Plan Report

Executive Summary

1.0 Introduction

2.0 Overview of the Business Planning Process

3.0 Description of the State
- 3.1 Current State CVO Program
- 3.2 Economic and Political Characteristics
- 3.3 Issues and Opportunities

4.0 Strategic Overview
- 4.1 Mission Statement
- 4.2 Guiding Principles
- 4.3 Goals and Objectives

5.0 Program Summary
- 5.1 Business Plan Structure
- 5.2 Description of Projects
- 5.3 Ranking of Projects

6.0 Organization and Management Approach
- 6.1 Lead Agencies
- 6.2 Scheduling and Milestones
- 6.3 Costs, Funding, and Return on Investments

7.0 Contact Names

Appendixes *(as needed)*

Figure 10. Outline of the written report of the ITS/CVO business plan.

The introduction identifies the purpose of the Business Plan, the contributors to the Plan, and the agencies who financially supported the Plan.

1.0 INTRODUCTION

The purpose of the State ITS/CVO Business Plan is to develop coordinated, efficient, safe commercial vehicle operations throughout the state, and initiate steps towards regional coordination and cooperation in CVO activities and ITS/CVO project deployment.

This Business Plan was organized and developed by the Department of Transportation with support from the Department of Revenue, Department of Motor Vehicles, the State Police, and the motor carrier industry.

The development of this Business Plan was supported by a grant from the FHWA ITS/CVO Mainstreaming funds and a state match provided by the state agencies.

The overview of the business planning process outlines the work steps that were involved in developing the Business Plan.

2.0 OVERVIEW OF THE BUSINESS PLANNING PROCESS

The business plan was developed in four phases, as follows:

- In Phase I, a Steering Committee was established to develop a strategic view for the ITS/CVO Business Plan.
- In Phase II, input from a broad range of state motor carrier agencies and the motor carrier industry was solicited through individual interviews and group workshops to identify problems in current CVO processes and potential solutions.
- In Phase III, specific projects were designed based on the recommendations of the Steering Committee in Phase I and the findings from the data analysis in Phase II. In addition, the roles and responsibilities for implementation of the Business Plan were identified and assigned.
- In Phase IV, a written report was prepared summarizing the Business Plan.

3.0 DESCRIPTION OF THE STATE

This section describes the issues and characteristics of the state that impact motor carrier activity, including current motor carrier regulatory processes and procedures, economic and political characteristics of the state that affect CVO, and opportunities for change in CVO.

The state ITS/CVO Business Plan explains the current procedures and practices used to administer and enforce motor carrier regulations.

3.1 Current State CVO Program

Currently, the State requires each motor carrier to register for up to 10 different credentials, including commercial drivers license, registration, and fuel tax. In the case of a non-standard load, the carrier must apply for a permit appropriate to the characteristics. These permits include: oversize/overweight permit, hazmat permit, . . .

The ITS/CVO projects that currently are being implemented in the State include:

The Business Plan should document existing TTS/CVO projects and deployment levels in the state.

- Participation in an operational test of regional electronic one-stop shopping;
- Deployment of laptop computers at 10 percent of fixed weigh stations;
- Upgrading 25 percent of current weigh-in-motion systems to high-speed weigh-in-motion;
-

This section describes the economic and political characteristics of the state that affect CVO, including the CVO regulatory structure.

3.2 Economic and Political Characteristics

There are X thousand motor carriers based in the State, accounting for a total of X thousand vehicles. These motor carriers account for the equivalent of X thousand full-time jobs. X hundred buses in the State account for X thousand passenger trips per year.

Currently five agencies are involved in motor carrier credentialing and two agencies are responsible for safety enforcement. These agencies are as folows: . . .

The motor carrier industry accounts for $X million in state revenues annually...

This section identifies the issues that affect CVO in the state and the opportunities that exist to apply ITS technologies.

3.3 Issues and Opportunities

Major issues affecting the administration and enforcement of CVO regulations in the State include the following:

- The Department of Transportation recently completed an extensive reorganization...

- The Department of Revenue recently automated its fuel tax accounting system in preparation for its imminent membership in International Fuel Tax Agreement...

-

4.0 STRATEGIC OVERVIEW

This section explains the vision and direction of the Business Plan. It includes the State's mission statement, guiding principles, goals, and objectives for its CVO program.

The mission statement is the overall, long-range intention for the state's CVO program.

4.1 Mission Statement

The mission of the State's CVO program is as follows:

- Provide high-quality, efficient, safe, and legal commercial vehicle shipping and busing services throughout the state.

Guiding principles are the underlying principles that guide the development of the ITS/CVO Business Plan.

4.2 Guiding Principles

The projects included in this Business Plan were developed to reflect the following principles:

- Projects should reduce the costs associated with the administrative processes of state agencies and motor carriers.
- Projects should lead to quantifiable improvements in public safety and revenue collection.
- ...

Goals are the broad achievements toward which the ITS/CVO program is directed. Objectives are specific components that embody these goals.

4.3 Goals and Objectives

The goals and objectives of the State's ITS/CVO program are as follows:

Goal: Enhance highway safety.

- **Objective:** Reduce the number and severity of highway accidents involving commercial vehicles.
- **Objective:** Improve motor carrier compliance with safety regulations.

Goal: Promote efficient state administration of commercial vehicle regulatory and enforcement functions.

- **Objective:** Implement one-stop shopping for registration, fuel taxation, and insurance registration.
- **Objective:** Automate credentials acquisition and transfer procedures.

Goal: Improve motor carrier productivity.

- **Objective:** Reduce the impact of traffic congestion **on** motor carrier operations.

- **Objective:** Eliminate unnecessary delays for weight and safety checks.

Goal: Support state, regional, and national economic growth and global competitiveness.

- **Objective:** Eliminate unproductive requirements, regulations **and processes.**

- ...

5.0 PROGRAM SUMMARY

The program summary includes an explanation of the Business Plan's classification of projects, a description of the projects, and a ranking of projects in order of priority.

This section **explains** how the projects in the Business Plan will be categorized, and connect each project to the specific objectives it is intended to fulfill.

5.1 Business Plan Structure

The ITS/CVO projects included in this Business Plan are categorized in four program areas: safety assurance, credentials administration, electronic screening, and carrier operations. They address the following problems:

Problems by Program Category	**Projects**
Safety Assurance	
• Lack of access to real-time data on motor carrier status	Project **#l** (Objectives a & b) Project #2 (Objective c)
Credentials Administration	
• Complex and redundant administrative system	**Project #3** (Objectives d & e) **Project #4** (Objective f)
Electronic Screening	
• Inefficient clearance of commercial vehicles at weigh stations and international borders	**Project #5** (Objectives g & h)
Carrier Operations	
• Lack of access to real-time data on congestion and weather	**Project #6** (Objectives i & j)

The project description gives an account of each of the ITS/CVO projects in the Business Plan, including its objective, intended result, participating agencies, and technical approach. The projects include both ITS and non-ITS projects.

5.2 Project Description

Project No. 3: Administrative Process Reengineering

Objective: Reengineer the CVO regulatory processes in the State to make them more cost-effective, productive, user-friendly, and efficient in meeting the state's objectives in maintaining a CVO regulatory system and in minimizing the administrative burden on the motor carrier industry.

Outcome: More efficient and cost-effective agency administrative processes resulting in improved agency and carrier productivity.

Lead Agency: State Department of Transportation (DOT)

Other Participating Agencies: All CVO regulatory offices

Market: Motor carrier industry and regulatory agencies

Approach:

- Conduct a management audit to document and quantify (where possible) the major inefficiencies and redundancies in the CVO regulatory administration process which result in lost productivity, foregone revenues, industry frustrations, and compromises to safety.
- Develop recommendations for reengineering the administrative processes (registration, fuel tax, OS/OW permits, operating authority, and commercial drivers' licences) to improve their efficiency.
- Quantify the costs and benefits of the reengineered systems to the extent possible.
- Develop process maps to document and understand regulatory procedures. The maps will facilitate the measurement of staff, time, and cost associated with each process, identify changes that will be required to improve the processes, and quantify the benefits of those changes.

Key Issues:

- A certain amount of agency staff resistance, defensiveness and nervousness should be anticipated.
- Process reengineering may require statutory changes.
- Quantifying the benefits of changes, particularly expected outcomes such as improved safety, can be difficult and expensive due to data limitations, sampling size requirements, and the relatively small number of incidents over short time periods.

Products: Management audit of existing conditions and recommendations for process engineering.

Schedule: 12 months – interim product within six months.

Cost: $800,000 estimated to conduct the management audit, develop the reengineering strategy, and quantify the benefits.

Estimated Project Management Requirement: One-half full-time equivalent.

Project No. 4: ...

This section explains how **the projects are** ranked, as well as the actual project ranking in order of priority.

5.3 Ranking of Projects

Based on the national ITS/CVO program and the prevailing sentiment among the members of the Steering Committee, it was decided that the State's highest priority is safety. Therefore the safety assurance projects that focus enforcement efforts on the identification of high-risk carriers are most important...

Projects Ranked by Priority
1. Project #1 Safety Assurance
2. Project #2 Safety Assurance
3. Project #5 Electronic Screening
4. Project #4 Credentials Administration
5. Project #6 Carrier Operations
6. Project #3 Credentials Administration

6.0 ORGANIZATION AND MANAGEMENT APPROACH

The organization and management approach covers:

1) The roles and responsibilities of public and private sector CVO stakeholders;

2) Scheduling, duration, and sequencing of projects; and

3) Anticipated funding levels and sources.

This section identifies the lead agencies involved in project implementation.

6.1 Lead Agencies

The Steering Committee will coordinate the scheduling of all projects through the lead agency assigned to each project. The lead agency is responsible for project management, financial reporting, coordination with other agencies, and management of outside contractors. Lead agencies are listed below.

Lead Agencies
Project #1 State Police
Project #2 State Police
Project #3 Department of Revenue
Project #4 Department of Transportation
Project #5 Department of Transportation
Project #6 Department of Transportation

This section identifies the schedule for implementation of the projects in the Business Plan, including key milestones, project duration, and sequencing.

6.2 Schedule and Milestones

Schedule and Milestones

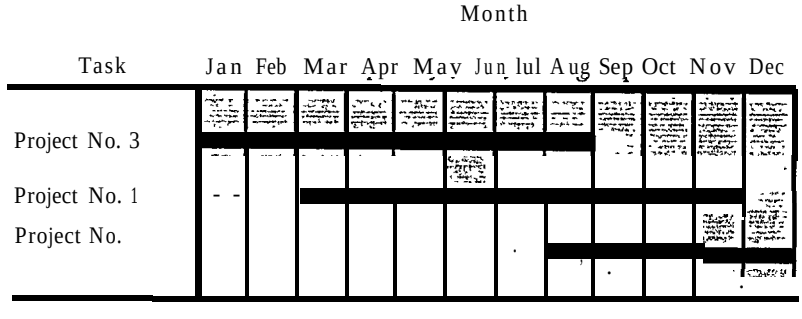
Project #1

- Milestone A Complete research and data collection
  (Scheduled completion date: 1/1/00)
- Milestone B Complete data analysis, findings, recommendations of alternatives
  (Scheduled completion date: 2/2/00)
- Milestone C Evaluate alternatives and propose work plan
  (Scheduled completion date: 3/3/00)
- Milestone D Complete implementation of project's action plan
  (Scheduled completion date: 8/8/00

Project #2

- ...

Project Duration and Sequencing



This section cites the overall cost of designing and implementing the projects, the available sources and levels of funding, and the probable **return on the** investment.

6.3 Costs, Funding, and Return on Investment

Project	cost
Project #1	**$200,000**
Project #2	**$100,000**
Project #3	**$400,000**
Project #4	**$500,000**
Project #5	**$300,000**
Project #6	**$500,000**
Total	$2,000,000

Funding is available through both public and private sources. Public funding sources include:

- The State Department of Transportation, Division of ITS/CVO;
- The State Department of Motor Vehicles, Division of Motor Carriers;
- The State Police, Motor Carrier Division;
- The State Department of Revenue; and
- The Federal Highway Administration, including the ITS field operational test program, the Motor Carrier Safety Assistance Program, . . .

Private sector funding includes funds provided by the State Motor Truck Association,...

Sources of Funding	Level
DOT Division of ITS/CVO	$X
DMV Division of Motor Carriers	$X
State Police Motor Carrier Division	$X
Department of Revenue	$X
FHWA	$X
State Motor Truck Association	$X
...	

The Business Plan should include contact names to allow for follow-up, requests for additional information, and feedback. The Business Plan Manager, Steering Committee members, and the consultant should be listed with their addresses and telephone numbers.

7.0 CONTACT NAMES

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Appendixes should be included only as necessary. Supporting information from the data collection phase or financial details may be included if significant. Reference to the appendix should be mentioned in the text of the Business Plan.

APPENDIX A
BIBLIOGRAPHY

APPENDIX B
INTERVIEW RESULTS

APPENDIX C
WORKSHOP RESULTS

6. Conclusions and Recommendations

A comprehensive and well developed ITS/CVO Business Plan provides a framework to:

- Identify problems in current CVO procedures and opportunities to apply ITS to address those problems;
- Achieve consensus to improve state CVO processes and improve communication among and between the state motor carrier agencies and motor carriers;
- Facilitate the development and deployment of ITS/CVO in a coordinated and cost-effective manner; and
- Create a concise summary of the state's plan for commercial vehicle operations.

The states and the motor carrier industry can contribute to the effective lTS/CVO business planning in the following manner.

STATE INITIATIVES

1. Each state should develop, and update on a regular basis, an ITS/CVO Business Plan with a strong policy commitment from state officials. The Plan should define the ITS/CVO services to be deployed in each state. It should detail the projects, objectives, roles, responsibilities, milestones, and funding, and estimate the costs and benefits of these activities for the state, motor carriers, and the public. Until states make these Business Plans a regular part of their doing business, the only constituency to continue ITS/CVO deployment will be individual agencies.

2. Each state should demonstrate its commitment to the Plan's success by allocating the appropriate financial and human resources to produce a comprehensive, meaningful plan. This commitment must include designating a Business Plan Manager to direct the plan's development; establishing a Steering Committee with broad representation of CVO agencies; and retaining outside contractors as necessary.

3. Each state should seek input from a broad range of agencies, both through formal representation on the steering committee and through participation in interviews, surveys, and focus groups. This participation should include not only state departments of transportation, but also state police, departments of revenue, public utility and commerce commissions, and toll authorities. Unless all of these agencies begin to communicate and work together, it will be impossible to develop and implement an effective Business Plan.

4. Each state should reach out to all relevant agencies and to the private sector to increase participation in, as well as to heighten awareness about, its ITS/CVO program. Communication, training, and education should be an important part of the business plan development process, as well as a core element of specific projects in the Business Plan.

MOTOR CARRIER INDUSTRY INITIATIVES

1. The motor carrier industry must participate fully in the development and implementation of ITS/CVO Business Plans. Many state agencies do not understand fully the needs and desires of the industry. Motor carrier participation should include industry associations such as the American Trucking Associations (ATA) or National Private Truck Council (NPTC), as well as representatives of individual carriers. Without sufficient private sector involvement, these Business Plans will fail.

Appendix A
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Appendix B
Suggested Interview Format for Motor Carriers

INTRODUCTION

The interviewer will:

- Explain the purpose of developing a CVO Business Plan for the state;
- Explain the approach to developing the Business Plan; and
- Explain the purpose or goals of the interview.
  - Understand something about the carrier's operations and involvement with ITS; and
  - Gather information and opinions on the problems with the current system and how ITS might be used to improve CVO in the state.

QUESTIONS

Brief Overview of Company

- How many trucks does your company operate?
- Do you operate locally, regionally, or nationally?
- In what other states do you operate?
- How time sensitive are your shipments?
- Do your routes vary often?
- Are you a for-hire carrier or private?
- What type(s) of products are you hauling?
- Does your company only operate in-state or does it operate out-of-state also?
- How does your company's operation compare in size with other carriers based in the state?

General

- What frustrations do the members of your firm express about their interaction with agency personnel and the credential/reporting process?

- How much staff time is required to stay in compliance with state and federal requirements?

- Does your company experience delays at the roadside for safety or weight inspections? What causes the delay?

  - What is the average length of delay?
  - How frequently are you issued a citation?

- If yes, is there a substantial cost that your company incurs for this delay?

  - In terms of time?
  - In terms of money for citations?
  - In terms of lost business due to delayed deliveries?

- What is your impression of commercial vehicle enforcement in the state? How does it compare to other states in which you operate? (Be specific as to which state.)

- What is the biggest CVO problem in the state? How would you recommend that this problem be addressed?

- What would you like to see changed about the regulatory system in the state with respect to deskside transactions (i.e., fuel tax, permits, CDL)?

- What would you like to see changed about the regulatory system in the state with respect to roadside enforcement (i.e., inspections)?

- How familiar are you with ITS technologies for commercial vehicle operations?

- Has your company been involved with any of the ITS initiatives in the state? If yes, please elaborate about the project(s) and its degree of success.

- Who is responsible for obtaining credentials for vehicles within the company? Is there staff at your company dedicated solely to obtaining credentials?

- How are credentials obtained from state agencies? Is the process automated in any way?

- Do you know which agencies are responsible for which CVO functions?

- What is the best way for you to learn the responsibilities of each *agency?*

  - Pamphlet
  - Diagrams
  - Presentation
  - Other _____

- Based on your understanding of ITS technologies, what programs or initiatives should the state pursue to improve conditions?
- What are some non-technical barriers to implementing ITS technology?
- Are there any issues you wish to comment on concerning CVO in other states or Canada ?
- Do you have additional concerns, issues, or suggestions?

Appendix C
Suggested Interview Format For Agencies

INTRODUCTION

The interviewer will:

- Explain the purpose of developing a CVO Business Plan for the state;
- Explain the approach to developing the Business Plan; and
- Explain the purpose or goals of the interview.
  - Understand the role of the individual or the role of the agency in the regulatory and enforcement process;
  - Understand the individual 's level of knowledge of ITS in general and in the state in particular; and
  - Find out how the individual thinks ITS could be used to improve CVO in the state.

QUESTIONS

Brief Overview of Responsibilities

- What are your responsibilities with respect to commercial vehicle operations?
- Please give an overview of the responsibilities of your agency with respect to motor carrier regulation.

General

- What type of computerized systems (i.e., databases) does your agency use to support the administration of the regulatory requirements?
- Do you anticipate any upgrades or changes to your computer system or administrative procedures in the near future?
- What is your impression of how the current system works? Do the regulatory requirements accomplish what they were designed to accomplish?
- Is the system user friendly for the customer (i.e., the motor carrier?)
- What aspects of the regulatory system, do you sense, are most frustrating to motor carriers?

- Is the system user friendly for your agency?

- What communication exists between your agency and other agencies with regulatory oversight responsibilities?

  - Are there forums to discuss CVO-related topics?
  - Are annual meetings or similar meetings held?

- What are the strengths and weaknesses of the existing system?

- What is the most difficult part of your job?

- What is the best part of your job?

- How familiar are you with ITS technologies for commercial vehicle operations?

- Have you been involved with any of the ITS/CVO initiatives in your state? If yes, please elaborate about the project(s) and its degree of success.

- For each of the regulatory functions that your agency oversees, please explain how the application and renewal process work for motor carrier credentials. What aspects have been automated?

  Which information is most difficult for you to get from motor carriers?

- What information does your agency check prior to issuing credentials to motor carriers? How is this information accessed if it is maintained by another agency? Is it difficult to obtain from other agencies?

- How are credentials issued to motor carriers? Is this process automated?

- Who is responsible for enforcing the credentials that your agency issues? How is that information verified from fixed or mobile enforcement facilities?

- Does your agency conduct motor carrier audits? If yes, how is this accomplished?

- Do you understand the functions of the agencies for CVO? If not, why not?

- What is the best way for you to learn the functions of the agencies for CVO?

  - Pamphlet
  - Diagrams
  - Presentation
  - Other _____

- Based on your knowledge of the available technology, which technologies have the potential to improve or streamline administrative functions?

- Which technologies do you think have the potential to reduce delays and improve safety at the roadside?
- What do you think are some non-technical barriers to adopting ITS/CVO technology?
- What ideas do you have to make the regulatory system operate more smoothly?
- What other programs or issues would you like to see included in a CVO Business Plan in your state?
- Are there any issues you wish to comment on concerning CVO in other states or Canada ?
- Do you have additional concerns, issues, or suggestions?

U.S Department
of Transportation
Federal Highway Administration

Review of ITS/CVO Institutional Issues Studies

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Review of ITS/CVO Institutional Issues Studies

Several regional coalitions are developing multi-year programs for commercial vehicle operations (CVO)[1] This program will include the application of Intelligent Transportation Systems (ITS)[2] technologies and services. This report identifies the institutional barriers that are likely to impede the development of ITS/CVO programs, and recommends strategies to overcome these barriers.[3]

OBJECTIVE

Early efforts to apply ITS to CVO focused primarily on the development, demonstration, and integration of specific technologies, such as weigh-in-motion, automatic vehicle identification, and onboard computers. Over the course of these early projects, it became apparent that the most serious barrier to the effective implementation of ITS for CVO may not be the ability to perfect the technologies themselves. Instead, the most significant barriers may be non-technical or "institutional issues" related to statutory, administrative, organizational, and resource constraints on the ability of the affected public sector and private sector organizations to incorporate these technologies into their business operations. The successful implementation of ITS for CVO must address these constraints.

To this end, in 1991 the Federal Highway Administration (FHWA) offered $50,000 to each state department of transportation to study the institutional barriers to the deployment of ITS for CVO. Every state except Hawaii participated in such a study, either independently or as part of a multi-state consortium.

This report reviews the institutional issues studies, and presents a synthesis of their findings. The objective of this review is to answer the following questions:

- What institutional issues have been identified as impediments to the deployment of ITS/CVO services and technologies?

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[1] Commercial vehicle operations comprise three dozen areas of interaction involving public agencies and motor carriers. These include functions such as truck registration, size and weight enforcement, vehicle maintenance and inspection, and fleet routing and dispatching. These transactions are critical for highway safety, carrier productivity, and tax collections.

[2] ITS (formerly known as Intelligent Vehicle-Highway Systems or IVHS) involve the application of advanced and emerging technologies in such fields as information processing, communications, control, and electronics to surface transportation needs. C.f. U.S. Department of Transportation, Joint Program Office for Intelligent Transportation Systems and Intelligent Transportation Society of America, National ITS Program Plan, First Edition, March 1995.

[3] This memorandum is based upon the technical memorandum for the I-95 Corridor Coalition's Project No. 4, Commercial Vehicle Operations Phase II, Task 1, entitled, "Review of ITS/CVO Institutional Issues Studies," prepared by Cambridge Systematics, Inc. (Document number I-95 CC 4-95-02)

- What strategies have been developed to resolve these issues?
- How have the institutional issues studies contributed to the deployment of ITS/CVO services and technologies?
- What lessons can be learned for the development of future CVO programs?

STRUCTURE AND PURPOSE OF STUDIES

The institutional issues studies were intended to provide a "bottom up" perspective on the institutional barriers, as well as the strategies to overcome these barriers and develop a national ITS/CVO program. The objective of the initial round of studies was to document the existing business practices for administering and enforcing commercial vehicle regulations; describe how ITS technologies could be applied to current regulatory programs; and identify the institutional barriers to ITS for CVO.

In all, 19 studies were commissioned: seven multi-state studies, comprising 37 states and the District of Columbia; and 12 single-state studies. Rather than forcing the states into particular groupings, the FHWA let the states find their own partners. The clusters of states that formed generally represent broad regional truck markets, centered in the Southeast, Middle Atlantic, Southwest, and Northwest regions (see Figure I).

A second phase of the studies, now underway, will emphasize the development and deployment of specific ITS/CVO services (see Figure II).

ITS/CVO SERVICES AND TECHNOLOGIES

The institutional issues studies demonstrated broad similarities in their examination of critical ITS/CVO technologies, services, and programs. The studies focused on a small list of technologies and services related to the administration and enforcement of motor carrier regulations. Other ITS/CVO services, such as fleet or traffic management, were discussed but not emphasized in the first-round studies.

Most of the studies recommended the development of the following four ITS/CVO services (see Table I):

- Creating or enhancing information systems or central databases;
- Creating or enhancing electronic data interchange (EDI) and electronic funds transfer (EFT) capabilities;
- Enhancing mobile enforcement capabilities through the use of portable weigh-in-motion (WIM) systems, portable computers, and other technologies; and
- Automating driver and vehicle safety inspections through the use of portable computers, timely roadside access to safety databases, and specialized in-vehicle equipment.

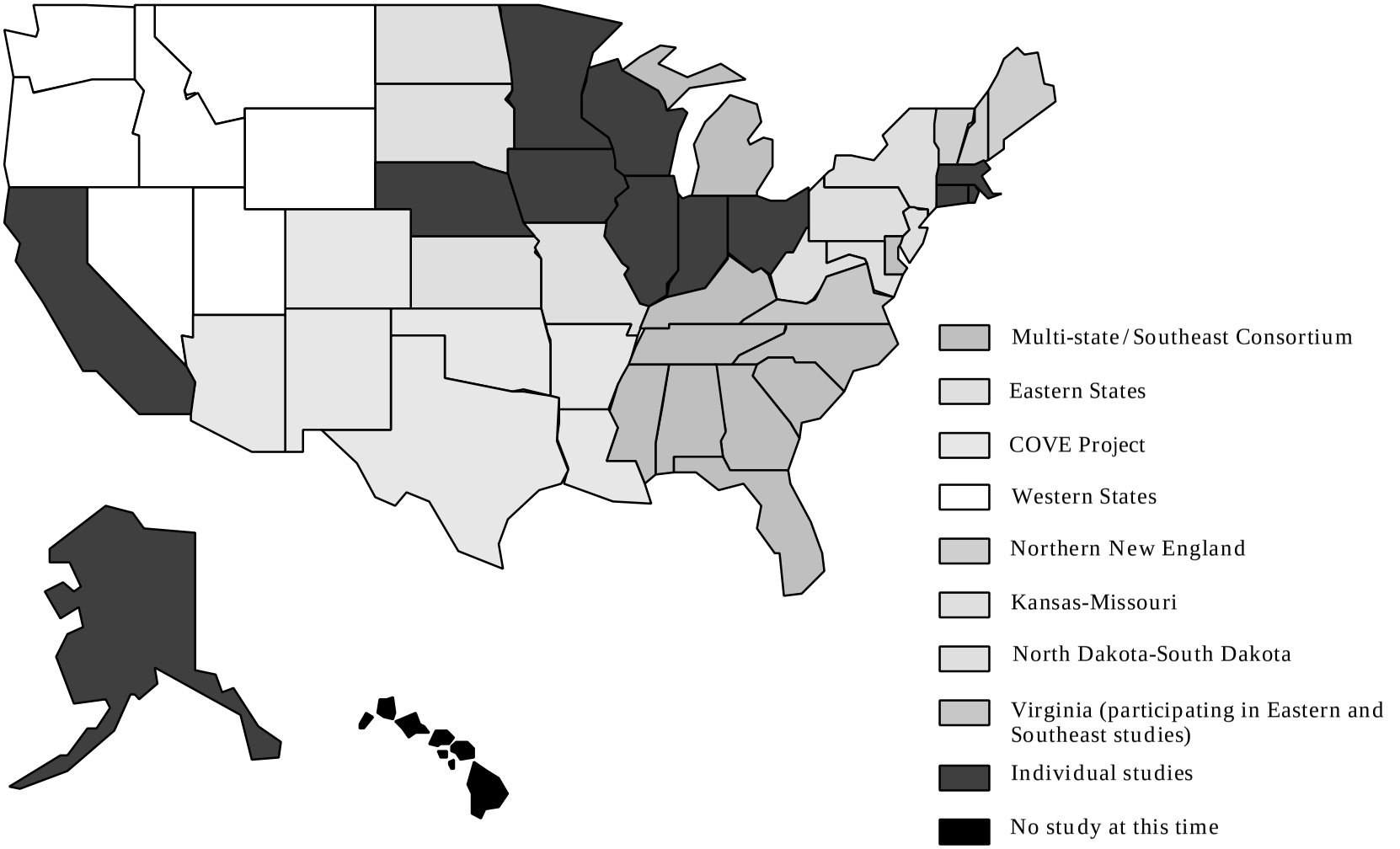

Figure I. Configuration of Phase I ITS/CVO institutional issues studies.

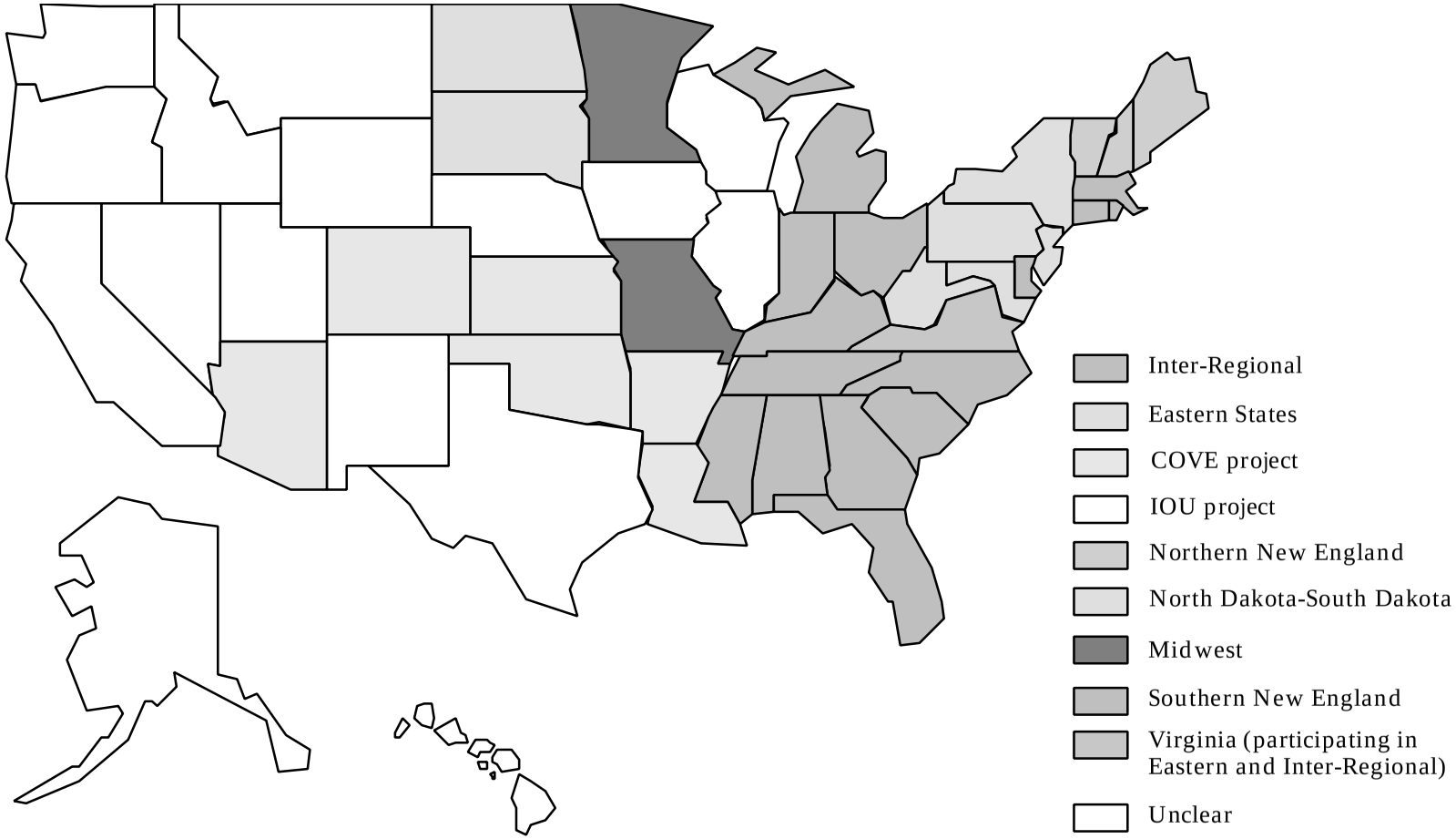

Figure II. Possible Phase II ITS/CVO institutional issues studies.

A copy of Table I can be found on the disk under the file name table1.doc.

These four services are likely to represent priorities for most ITS/CVO programs. Other services that were recommended include:

- Using dedicated short-range communication (DSRC), WIM, and similar technologies to develop automated methods for verifying credentials and clearing vehicles at weigh stations and other inspection sites;
- Developing a one-stop permit shopping program;
- Deploying electronic toll collection systems;
- Providing basic information services to the trucking industry (such as a toll-free information number);
- Enhancing WIM capabilities; and
- Developing advanced traveler information systems for commercial vehicles.

A central theme of many studies was that improvements to CVO administrative and enforcement activities need not involve advanced technologies. The studies found that in many states, major efficiency gains could be realized simply by making computers and EDI/EFT capabilities more widely available. Most often, the missing element is the capability for different agencies to link systems and share data.

INSTITUTIONAL BARRIERS AND STRATEGIES

The studies displayed a striking degree of commonality in the identification of institutional barriers and strategies to overcome barriers. To compare the barriers across the studies, a framework encompassing three broad categories – mandate, organization, and resources – was used.

Mandate

Mandate barriers and strategies are associated with the legal and political conditions and requirements, or the commercial market, for ITS/CVO programs. Most efforts that significantly affect the way that business operations are conducted require some kind of mandate – from legislation, executive order, popular demand, or market demand. A mandate provides legitimacy and support for action.

Barriers

The studies identified three primary mandate barriers to the ITS/CVO programs. These barriers are as follows:

- **Inconsistent support from the top management of the agencies involved in CVO.** Efforts to implement ITS/CVO services cannot succeed without support from the top management of the public agencies that are involved in CVO. Without this mandate, it is difficult to make the organizational changes or commit the resources necessary to support ITS/CVO

programs. Each agency with commercial vehicle responsibilities – from departments of transportation and revenue to state police and utility commissions – must make ITS/CVO a priority for any major innovation to succeed. However, this support is uneven and inconsistent, both among states and among agencies within a single state. A primary source of this inconsistent support appears to be a lack of customer service orientation among CVO agencies. Other contributing factors include inadequate understanding and appreciation of ITS/CVO services and their potential benefits, as well as uncertain support from state legislatures.

- **Limited support from the motor carrier industry.** Uneven and inconsistent support for ITS/CVO programs also is evident in the motor carrier industry and among third-party service providers. Most major ITS/CVO programs – apart from purely internal reengineering of state administrative processes – require that the motor carrier industry be a full partner in achieving the change. Industry support often has been limited because of fears about the use of technology for enforcement and revenue enhancement. Other contributing factors include the lack of well-defined ITS/CVO products, services, and benefits for motor carriers; concerns about equity and the impact of new technologies on smaller carriers; and concerns about data privacy, security, and use.

- **Statutory, regulatory, and administrative impediments.** In many states, the current language of statutes and regulations does not reflect the advent of modern communications systems and information technologies. References to "written communication" or "paper" credentials that are "carried" in vehicles or by drivers, if strictly enforced, would prohibit the widespread use of EDI, EFT, and DSRC.

Potential Impact on ITS/CVO Programs

These mandate barriers are likely to impede efforts to implement ITS/CVO programs in many regions. Generating support for an ITS/CVO program from the many state agencies that affect CVO throughout a region, as well as from legislative chambers and state houses, is difficult. Congestion and highway safety are well-recognized problems, but few regional stakeholders appear to realize that all of the affected states and agencies, as well as the motor carrier industry, must work together toward a common solution. The critical hurdle to achieving this top-level buy-in is the lack of understanding about CVO services, ITS technologies, and the need for change. Agencies must be convinced that investments in advanced traffic and fleet management systems, and the streamlining of administrative processes, will support their efforts to improve safety, productivity, and economic growth.

Similarly, support from the motor carrier industry for ITS/CVO services is uncertain. The diverse motor carrier industry often is divided on public policy issues. Most motor carriers agree that congestion is a problem and that improving productivity is a priority, but not all see ITS/CVO services as a solution.

Strategies

The major strategies to overcome these mandate barriers include the following (see Table II):

- **Involve the top leadership of major agencies** in the development and implementation of the ITS/CVO program, to foster a sense of "ownership" and secure "buy in." Work with

Table II. Mandate barriers and strategies.

Barrier	Strategies
Inconsistent agency support	Involve top leadership in planning and development; conduct information programs; document early successes
Limited motor carrier support	Conduct outreach programs; make participation voluntary; emphasize services with broad appeal to the industry; use a third party to manage data
Outdated statutes and regulations	Draft enabling language or legislation

middle and line-managers from state agencies on the details of deployment, and help nurture a customer service orientation.

- **Conduct education and information programs** among public sector agencies and motor carriers to raise the level of understanding about the structure, objectives, and functions of CVO, as well as the technologies and potential benefits associated with ITS.

- **Make carrier participation voluntary,** particularly in the early stages of program development. An explicit policy supporting voluntary participation will channel early benefits to the carriers who are willing to support deployment and make the required investment in necessary equipment. It also will relieve fears about the use of technology for revenue enhancement.

- **Begin with less controversial applications that will benefit a broad range of carriers.** The early stages of the ITS/CVO program should emphasize services that have broad appeal within the motor carrier industry.

- **Document the early successes of ITS/CVO projects.** Although the major demonstration projects (Heavy-vehicle Electronic License Plate [HELP] and Advantage CVO) are relatively well documented, less information is available about many of the other ITS/CVO projects and operational tests across the nation. Better documentation of these projects, and widespread dissemination of their results, can help agency and carrier managers understand the processes and technologies involved. Documentation also can make the case for agencies or carriers to invest their own time and resources in further deployment.

- **Promote changes in outdated statutes, regulations, and rules.** Agencies can draft enabling legislation or language, seek support from key legislators and administrators for the changes, and identify opportunities in existing laws and regulations where flexible language supports ITS/CVO services.

Organization

Organization barriers and strategies relate to the ways in which organizations are structured and administered, and how they respond to or implement change. ITS/CVO programs encompass three dimensions of organizational relationships: agency-to-agency, state-to-state, and agency-to-carrier.

Barriers

The studies identified three primary organization barriers. These barriers are as follows:

Lack of intrastate coordination among agencies involved in motor carrier administration and enforcement. Lack of communication, cooperation, and coordination among CVO agencies within a single state is a fundamental obstacle to achieving meaningful improvements in current CVO administrative and enforcement activities. In every state, CVO responsibilities are fragmented among multiple agencies. The goals and priorities of these agencies often are unclear or inconsistent. Redundancies and overlapping responsibilities often create "turf wars" among agencies involved in CVO. These conflicts can lead to disagreements about the objectives and configurations of ITS/CVO programs.

- **Lack of uniform regulations and policies across states.** Organizational complexity is as much a problem across states as it is within states. The problem is not just lack of coordination among states; it also encompasses outright conflicts in regulations and policies. Issues relating to intrastate organization quickly multiply when multiple states become involved in a single truck movement. For example, states with large numbers of weigh stations tend to be more concerned with preclearance than are states that rely primarily on mobile enforcement. This is but one example of where differing priorities for state CVO programs lead to conflicting needs for ITS/CVO services.

- **Lack of cooperation and trust between state agencies and motor carriers.** Historically, state agencies and motor carriers have had difficulty developing cooperative, non-adversarial relationships. For the most part, carriers have seen the state only as a regulator and collector of fees and taxes. Motor carriers have no perception of being a "client" of state services, and many state agencies are not oriented toward providing customer service to the trucking industry. Carriers and agencies often have difficulty communicating, and frequently are unable to work together.

Potential Impact on ITS/CVO Programs

Even if a mandate develops in support of an ITS/CVO program, it is not clear that the public and private organizations in the region are prepared to implement the changes that the program would require. Coordination and communication among multiple layers of organization are a significant hurdle that an ITS/CVO program must overcome. In each region, a multitude of state agencies, local governments, toll authorities, and port authorities have responsibility for some piece of the CVO process. This dispersion of authority is associated with overlapping responsibilities, conflicting priorities, and bureaucratic stalemate, both within and among states. The historical lack of cooperation and trust between agencies and carriers poses another organizational challenge.

Strategies

The major strategies to overcome these organization barriers include the following (see Table III):

- **Create formal inter-agency, multi-state, public/private working groups to improve communication.** Participants in the institutional issues studies indicated that the use of working groups dramatically improved communication and information sharing about CVO activities. These working groups have continued to meet in several states and regions.

- **Clarify the role of each state and agency, and designate a lead agency to develop and implement particular ITS/CVO services.** The working groups must make all agencies aware of the role they play in CVO, and where agency responsibilities and objectives may overlap or conflict. Once roles are defined more clearly, the next step is to develop more efficient coordination among agencies. The institutional issues studies demonstrated that multiple agencies can work together to analyze problems; now, this process must be extended to develop solutions and put them into operation.

- **Develop state, regional, and national ITS/CVO business plans and agreements.** The development of formal, written plans can resolve many concerns about roles and priorities, as well as identify future projects. Policies, plans, and programs must be developed at three

Table III. Organization barriers and strategies.

Barrier	Strategies
Lack of coordination among agencies	Create a formal inter-agency working group; clarify agency roles; designate a lead agency; develop a state CVO plan
Lack of uniform regulations and policies across states	Create a formal inter-state working group; pursue multi-state agreements; develop a regional and national CVO plan
Lack of cooperation and trust agencies and carriers	Create a formal public/private working group; involve carriers in planning and implementation

levels: the state level, because state agencies have first-line responsibility for administering and enforcing commercial vehicle regulations; the regional level, because many truck trips occur in multiple states; and the national level, because of the need to ensure uniformity of services for carriers that operate in multiple regions.

- **Involve carriers in ITS/CVO planning and implementation.** The major trucking industry associations such as the American Trucking Associations (ATA) and National Private Truck Council (NPTC) played a valuable role in the institutional issues studies. However, participation by individual carriers usually was limited by time constraints. Creative ways to obtain input and support from carriers that do not require major time commitments must be developed. Communication between agencies and carriers must be enhanced.

Resources

Resource barriers and strategies relate to the availability of key human, financial, and technical resources to produce an ITS/CVO program.

Barriers

The studies identified four common resource barriers, as follows:

- **High anticipated public and private implementation costs.** The potential cost of ITS/CVO technologies and services was identified as a barrier in every study. Funding needs include one-time capital costs for purchasing and installing equipment and for developing information systems, as well as ongoing costs for operations, maintenance, and personnel training. Cost concerns are real because of funding constraints at most CVO agencies, as well as the relatively low priority given to CVO by most state governments. The lack of demonstrated, quantifiable benefits to justify the new technologies and systems exacerbates this concern. In addition, agencies and carriers are concerned about how the costs of ITS/CVO programs will be allocated, and whether their share of costs will be in proportion to their share of benefits.

- **Lack of technical expertise among the current personnel of many CVO agencies.** Many agencies are hindered in their ability to implement ITS/CVO programs because their personnel have had limited exposure to communications and information technologies. Transportation agencies historically have been oriented around skills such as highway engineering and planning. ITS/CVO program support requires a different set of skills, including expertise in electronics, computer programming, and information systems.

- **Lack of public sector data processing capabilities, and the incompatibility of existing systems among and within states.** Inventories of existing equipment and systems confirm that many public sector agencies currently lack the data processing and information systems that are capable of handling the wide variety of data and tasks required by most ITS/CVO programs. In addition, many of the existing systems are not compatible across agencies and across states.

- **Lack of national technical standards.** The lack of clear national standards for many technologies contributes to agency and carrier reluctance to invest in ITS systems for fear that they will deploy technologies that are destined for obsolescence. Areas that need standards

include transponder capabilities, communications protocols, data definitions, and vehicle and carrier identifiers.

Potential Impact on CVO Programs

The major resource barrier facing most CVO programs will be a lack of funding. Fiscal conditions among most levels of government are tight. In addition, large numbers of CVO stakeholders raise concerns about the distribution of costs and benefits. Strengthening the mandate for ITS/CVO may increase the availability of existing funds. Efforts must be made to secure federal and state monies for large-scale programs.

The major technological hurdle is the incompatibility of existing information systems across agencies and states. Technology is less likely to be a pressing issue in regions with leading high-tech industries and a high level of formal educational attainment among area workers.

Strategies

The major strategies to overcome these resource barriers include the following (see Table IV):

- **Develop an incremental implementation plan.** Start with low-cost technologies and use the savings generated by early efforts to expand the system. An incremental approach can build support for the program, particularly as early successes are documented and publicized. An incremental approach would begin with small-scale pilot programs and operational tests, and move toward wide-scale deployment. From a cost perspective, a well-planned incremental approach that generates early cost savings can be leveraged to finance additional ITS/CVO services. From a technical perspective, beginning with relatively simple technologies can give staff time to move up the learning curve.

- **Develop a broad-based funding plan** that includes a combination of federal, state, local, and private sector resources. Federal funding can provide seed money, but ongoing program support will require a strategy to increase state and carrier investments. Agencies and motor carriers must be encouraged to share the costs of the ITS/CVO program in a reasonable manner.

- **Expand and leverage staff expertise** through a combination of offering training programs to existing staff; recruiting staff with specialized skills in engineering, electronics, information systems, law, finance, and other areas; and retaining outside contractors, where appropriate.

- **Invest in new equipment and software.** An early emphasis of ITS/CVO program expenditures should be to procure new computers, software, and data communications capabilities that are state-of-the-art and compatible with those of other states and agencies. States and agencies should cooperate in systems development and implementation.

- **Encourage the development of national technical standards** for automated communication. National agreement on the protocols for DSRC, EDI, and EFT would help achieve interstate system compatibility.

Table IV. Resource barriers and strategies.

Barrier	Strategies
High anticipated public and private implementation costs	Adopt an incremental implementation plan; develop a broad-based funding plan; document costs and benefits
Lack of technical expertise among current personnel of state agencies	Begin with simple technologies; set up training programs; recruit new staff or retain outside contractors as needed
Incompatibility of existing information systems across states	Invest in new equipment and software; cooperate in systems development and implementation
Lack of national technical standards	Encourage the development of standards

RECOMMENDATIONS FOR REGIONAL CVO PROGRAMS

The analysis of the institutional issues studies reveals several lessons that regional ITS/CVO consortia should apply in developing their long-term ITS/CVO programs:

- **Form and support multi-state, multi-agency working groups.** The establishment of formal working groups proved to be one of the most valuable contributions of the institutional issues studies. The most successful groups have endured beyond the projects' completion to implement some of the recommendations. All regions should identify opportunities to form strong, cohesive working groups. Federal or state resources will be necessary to ensure continuity of participation in these groups.

- **Incorporate the full spectrum of agencies involved in CVO.** The more successful institutional issues studies benefited from participation by a wide range of CVO agencies - not just state DOTs, but also state police, revenue departments, public utility commissions, and toll authorities. Unless all of these agencies begin to communicate and work together, it will be impossible to achieve an effective solution to the organizational problems facing CVO. Many of these agencies are not members of a regional consortium and must be engaged in the process.

- **Seek private sector participation.** It is clear from the institutional issues studies that many state agencies do not understand fully the needs and desires of the motor carrier industry. The studies experienced varying degrees of success in involving the motor carrier industry. Most working groups included representation from the American Trucking Associations (ATA), the National Private Truck Council (NPTC), or another association, but less than half of all studies benefited from dedicated participation by individual motor carriers. Regional consortia must develop innovative ways to involve motor carriers in the planning process.

- **Include a major outreach effort.** The regional consortium must reach out to all relevant agencies and to the private sector to increase the awareness of, and participation in, ITS/CVO programs. The institutional issues studies highlighted widespread deficiencies in the awareness and appreciation of not only particular ITS technologies, but also the full scope of CVO. The development of a common framework for understanding ITS and CVO would enable more substantive discussions among the CVO stakeholders in the corridor.

- **Document the costs and benefits of ITS/CVO projects.** Benefit/cost analysis has been the weak link of the institutional issues studies. Although formal benefit/cost analysis often requires a large data collection effort, the regional consortium must develop information on the benefits and costs of its projects to build support and diffuse concerns about funding.

- **Address the needs of individual states.** The experience of the institutional issues studies suggests that multi-state projects are better able to address the full spectrum of challenges facing interstate trucking and CVO regulation. However, single-state projects are more adept at generating tactical recommendations and supporting the implementation process. Regional consortia should recognize that the challenges, political systems, and personalities involved in CVO vary across states. The process for developing and implementing the ITS/CVO program must provide both a common vision for the region and a means for individual states to pursue projects of interest.

Table I. ITS/CVO programs recommended by institutional issues studies.

Programs	Selected Studies							
	Eastern States	NNE	CT	MA	South East	COVE	Western States	CA
Set up/enhance information systems/central database	◆	◆	◆	◆	◆	◆	◆	◆
Enhance EDI and EFT capabilities	◆	◆	◆	◆	◆	◆		
Enhance mobile enforcement capabilities	◆	◆	◆	◆	◆	◆	◆	
Automate driver/vehicle safety inspections	◆	◆	◆	◆	◆	◆	◆	
Develop and deploy electronic preclearance	◆	◆		◆	◆	◆	◆	◆
Test/implement one-stop shopping concept	◆		◆	◆	◆	◆		◆
Automate toll collection	◆	◆		◆				
Develop basic information services for motor carriers	◆	◆	◆	◆				
Monitor international border clearance		◆				◆	◆	◆
Enhance WIM capabilities		◆			◆	◆	◆	

CVISN Model Deployment and Mainstreaming

How Do They Fit?

prepared for

Federal Highway Administration

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Cambridge Systematics, Inc.
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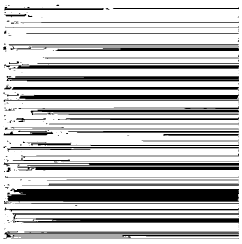

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CVISN Model Deployment and Mainstreaming: How Do They Fit?

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.

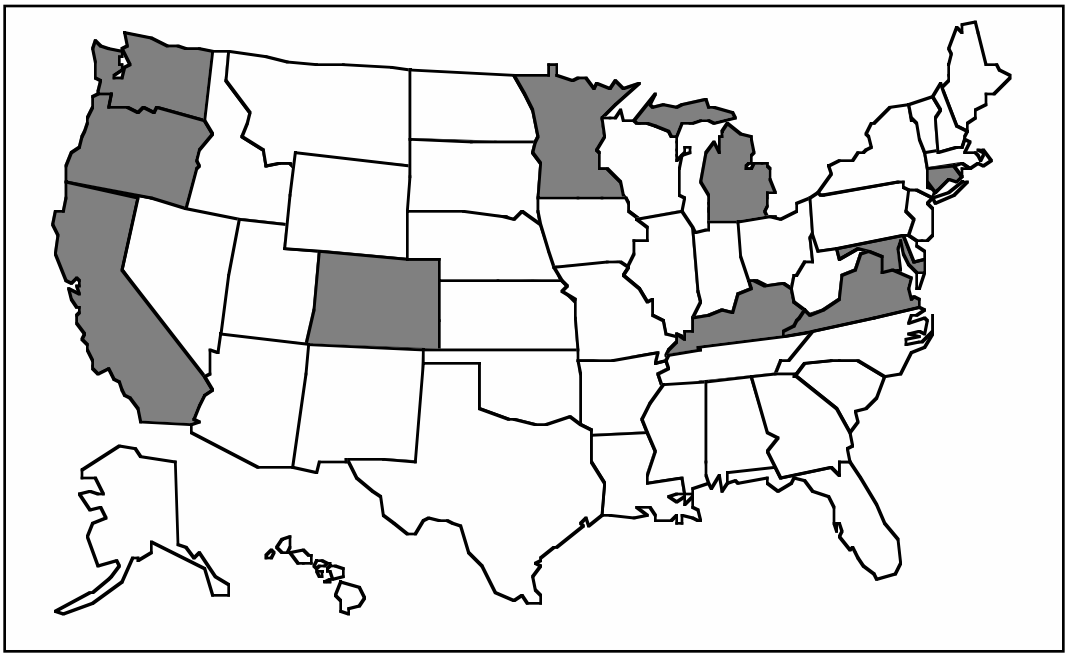
The ITS/CVO program already has made great progress. Key technologies such as weigh-in-motion, electronic data interchange, and mobile communications have been developed and deployed. States and carriers are participating in operational tests and deployments using these and other technologies to screen 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:

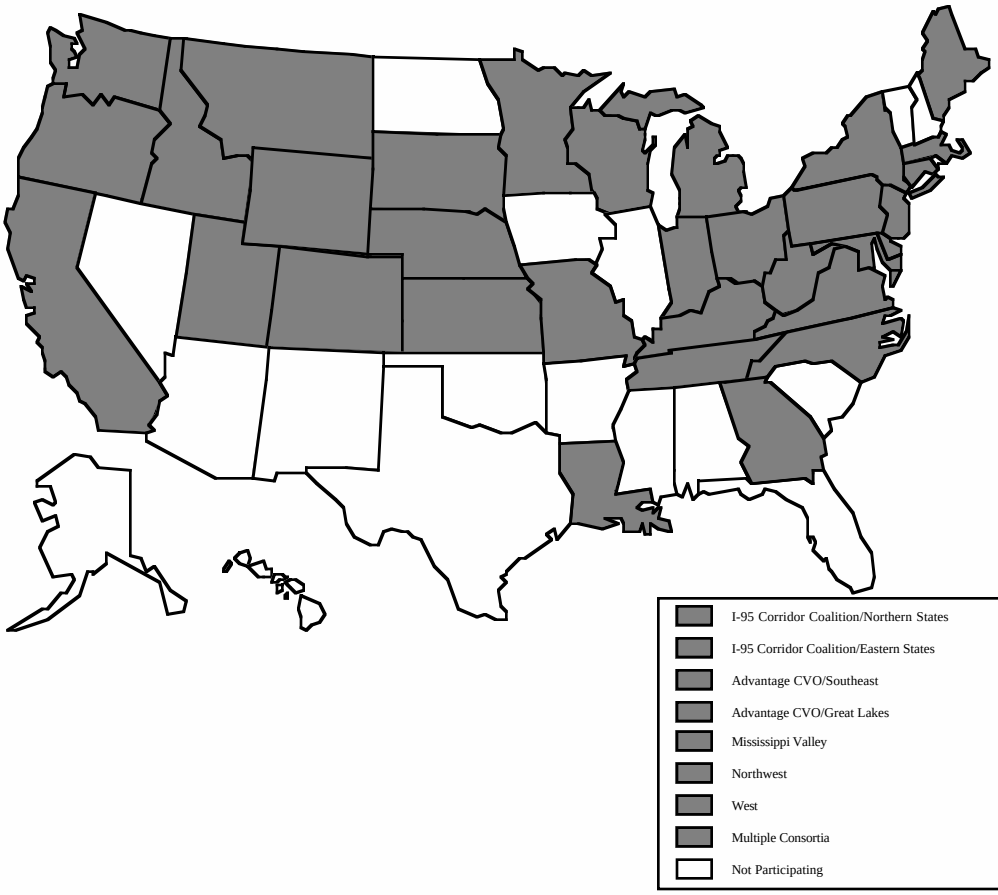
A technical framework for linking information systems and ITS/CVO services. Through the CVISN initiative, the FHWA is developing a blueprint for a national ITS/CVO architecture and standards, protocols, and unique identifiers to facilitate the electronic communication capabilities that enable most ITS/CVO 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).

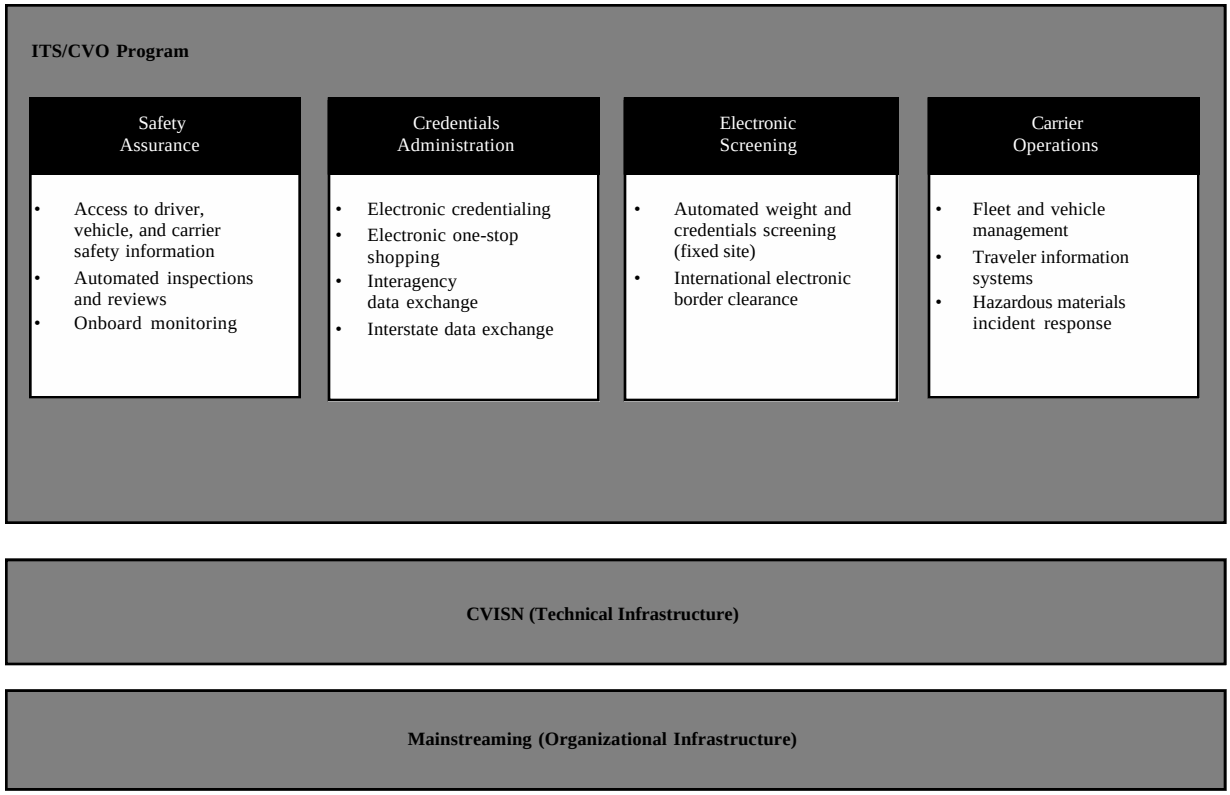
Figure 2. REGIONAL ITS/CVO MAINSTREAMING FORUMS



Note:
The following states are participating in two CVO consortia: Kentucky (Great Lakes and Southeast), Utah (Northwest and West), Virginia (Eastern States and Southeast), New Jersey (I-95/Northern and I-95/Eastern), and West Virginia (Eastern States and Great Lakes).

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 pans 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.

NATIONAL GOVERNORS ASSOCIATION

Economic Development and Commerce Policy Studies Division

Center for Best Practices

A Governor's Guide to Intelligent Transportation Systems/ Commercial Vehicle Operations

by Jay Kayne and Thorn Rubel

Since their initial meeting in 1908 to discuss interstate water problems, the Governors have worked through the National Governors' Association to deal collectively with issues of public policy and governance. The association's ongoing mission is to support the work of the Governors by providing a bipartisan forum to help shape and implement national policy and to solve state problems.

The members of the National Governors' Association (NGA) are the Governors of the fifty states, the territories of American Samoa, Guam, and the Virgin Islands, and the commonwealths of the Northern Mariana Islands and Puerto Rico. The association has a nine-member Executive Committee and three standing committees-on Economic Development and Commerce, Human Resources, and Natural Resources. Through NGA's committees, the Governors examine and develop policy and address key state and national issues. Special task forces often are created to focus gubernatorial attention on federal legislation or on state-level issues.

The association works closely with the administration and Congress on state-federal policy issues through its offices in the Hall of the States in Washington, D.C. The association serves as a vehicle for sharing knowledge of innovative programs among the states and provides technical assistance and consultant services to Governors on a wide range of management and policy issues.

The Center for Best Practices is a vehicle for sharing knowledge about innovative state activities, exploring the impact of federal initiatives on state government, and providing technical assistance to states. The center works in a number of policy fields, including agriculture and rural development, economic development, education, energy and environment, health, social services, technology, trade, transportation, and workforce development.

ISBN 1-55877-273-1

Funding for this publication was provided under a grant from the Federal Highway Administration, U.S. Department of Transportation.

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Acknowledgements

The National Governors' Association (NGA) wants to thank the many individuals who contributed time and information to this report. NGA is especially grateful to the state roundtable participants who engaged in a constructive dialogue on the public policy considerations affecting implementation of intelligent transportation systems/commercial vehicle operations (ITS/CVO) NGA also wants to thank the members of the ITS/CVO cost/benefit technical advisory group for reviewing the initial report draft and providing additional comments.

The Federal Highway Administration of the U.S. Department of Transportation provided the financial support for this project.

The authors of this report are Jay Kayne, director, and Thorn Rubel, director of transportation programs, Economic Development and Commerce Policy Studies Division, Center for Best Practices. Raquel Stanton provided expert technical support. Karen Glass of the Office of Public Affairs edited the report. Their contributions are gratefully acknowledged.

Executive Summary

The nation's economic future increasingly depends on the ability of American businesses to compete successfully in a global economy. States have used regulatory reform to support improvements to the productivity of U.S. firms. The commercial motor carrier industry is among the most regulated segments of the economy, Although the industry has raised questions about the degree of state regulation, the majority of complaints about state regulation and taxation of commercial motor carriers have focused on the excessive administrative burden and costs to comply with each state's requirements rather than the requirements of one national entity. To address these concerns, states, in consultation with the motor carrier industry, have developed base state and reciprocal systems such as the International Registration Plan and the International Fuel Tax Agreement to support the vision of a "seamless" national highway system.

Concurrent with the development of base state and other reciprocal agreements, new technologies have emerged that are designed to replace manual administrative processes with automation and electronic substitutes, The ability to send and receive information from a commercial motor vehicle traveling at highway speeds and to disseminate that information along the vehicle's entire route is an essential element of the vision of seamless highways. In addition, the ability of a carrier to electronically request and receive credentials or to file tax reports with its base state eliminates the need for state employees to enter information manually. Equally important, this electronic data can be shared more easily with other states in which the carrier operates.

This collection of advanced information and communications technologies is known as intelligent transportation systems/commercial vehicle operations (ITS/CVO) and covers three generals areas of state motor carrier regulation: safety assurance: administration of the credential process (e.g., vehicle registration): and commercial vehicle clearance at ports of entry and weigh stations. Many of the specific technologies (e.g., weigh-in-motion, automated vehicle identification, and automated vehicle classification) have or are being tested through a series of operational tests funded by the U.S. Department of Transportation.

States and the motor carrier industry are looking at institutional barriers that may prevent or deter deployment of ITS/CVO technologies nationwide. This guide examines the potential roadblocks to implementing these technologies and the role Governors can play in overcoming these barriers to implementation.

States and the motor carrier industry must address the following question: Is there suffi cient benefit from deployment of ITS/CVO to justify investment in new facilities and systems? The question is crucial because there is no federal mandate for either states or the industry to use ITS/CVO technologies. The willingness of both the public and private sectors to invest in the up-front costs and long-term operation and maintenance of the system will depend on the potential for real cost savings and increases in productivity. Research in this area is not complete. A cost/benefit analysis from the carriers' perspective conducted by the ATA Foundation suggests that certain ITS/CVO elements are more beneficial to the industry than others.' Moreover, the benefits of any component of the system vary according to each carrier's characteristics.

A state's willingness to invest both fiscal and political capital to convert to ITS/CVO varies according to the size of the state and the number of commercial motor carriers based and/or operating in the state. It also varies among state

commercial vehicle operations services. An additional issue for states is whether the introduction of advanced information technologies will result in major regulatory reform, not simply the automation of current procedures.

Any full-scale deployment of ITS/CVO technology will occur only after the question of who will pay for the system is answered. The answer to this question is closely related to the issue of demand. If the deployment of ITS/CVO results in real productivity gains for enough carriers, the industry will determine that it is in its interest to invest in the system. Similarly, if states can realize administrative efficienices and cost savings, they will shift revenues to this effort.

The financing of a national ITS/CVO network involves both front-end investment in facilities and funds to cover long-term operation and maintenance costs. To date, the federal government has covered the majority of front-end costs through the operational tests. In addition, these demonstrations have subsidized the cost of equipment (e.g., transponders) for participating carriers. Many states acknowledge that they need to invest in new facilities (e.g., weigh stations) because the existing ones are obsolete or need repair. As states make these investments, they can support ITS/CVO deployment or consider ITS/CVO technology alternatives. Only one multistate ITS/CVO project now includes a transaction fee for carriers that use the system. It is too early to determine whether there is sufficient demand to make the system self-supporting.

Although substantial questions remain regarding the costs and financing of these technologies, there are also concerns about coordination and standards. Primary among these concerns is one voiced by the motor carrier industry that it cannot support a framework in which vehicles must be equipped with redundant systems in order to comply with varying state technical specifications. This issue has significant economic ramifications for the vendors that have attempted to penetrate the ITS/CVO market. Resolution of this sensitive issue will require agreements among states and between states and vendors concerning the eventual standard for on-road transmission and receipt of electronic data.

Coordinating the automated collection and dissemination of data is also hampered by continuing differences among states in regulatory policies and interpretations of these policies. Eventual agreements on standards may depend much more on substantive policy agreements among states than on technical specifications.

Finally, there is the issue of coordinated data sharing among states and among agencies within a state. This issue is being addressed through the Commercial Vehicle Information Systems and Networks (CVISN) initiative. This system, based on a standard set of data transmission protocols, will ensure that carriers and state agencies can communicate electronically regardless of the hardware and software that is used by system clients. The most formidable barriers are institutional, not technical, including the desire of some state agencies to protect what they view as proprietary networks.

Two other important issues have emerged during the ITS/CVO operational tests. The first relates to the protection of a carrier's proprietary information, generally defined as data related to specific customers, specific commodities transported, and specific routes. The second issue is the potential use of ITS/CVO technology to change the way that states tax the commercial motor carrier industry. The availability of more accurate information about weights and routes raises concerns that states will use ITS/CVO to change from the current system of fuel-use taxes to one using weight-distance taxes.

Assuming that ITS/CVO provides an avenue for states to reform their motor carrier regulation and taxation systems in ways that benefit both the public and private sectors, Governors can play a critical role in promoting further acceptance and deployment of these technologies. Governors can take the following steps to facilitate implementation of ITS/CVO.

- Draw the links between ITS/CVO deployment and other state development objectives.
- Establish mechanisms and forums through which states and the motor carrier industry can jointly address barriers. Including the regulated industry in the decisionmaking process is especially important to address issues such as the protection of proprietary information and potential changes to the tax structure.
- Identify incentives to encourage public and private officials to shed their traditional views of the state/industry relationship, opening the door for more creative applications of advanced technologies to facilitate regulation of the motor carrier industry.
- Support and facilitate multistate arrangements that ensure the coordination and development of standards across state boundaries.
- Encourage the directors of state agencies with responsibility for motor carrier regulation and taxation, as they prepare their budgets, to investigate the potential of ITS/CVO technologies for producing cost savings and more effective administration.

Greater support for ITS/CVO can be achieved only if the demand for and benefits of these technologies can be determined. Two activities are central to this determination. First, NGA has received a grant from the Federal Highway Administration to conduct an objective cost/benefit analysis of ITS/CVO from the states perspective. This analysis will take into account differences among states and the value of applying ITS/CVO technologies to specific state motor carrier services. A report on the study will be released at NGA's Annual Meeting in July 1997.

Second, the benefit of ITS/CVO to the industry depends on the extent to which these technologies bring about a truly seamless national highway system. For this reason, the future of ITS/CVO depends heavily on states' ability to reconcile the differences among ITS/CVO approaches and develop standards for national deployment.

Introduction

The economic health of the United States depends largely on the ability of American businesses to compete successfully in a global economy. To increase the competitive advantage of firms doing business within their states, many Governors have implemented or are exploring ways to reform the regulatory climate. The debate over regulatory reform must reconcile the financial and administrative burdens on industry with the need to perform legitimate government functions, such as constructing and maintaining public infrastructure and protecting public health and safety.

The commercial motor carrier industry is among the most regulated segments of the U.S. economy. State regulation of motor carriers includes:

- assessing the safety of motor carrier operations, especially the condition of vehicles, the qualifications of drivers and the transportation of hazardous materials and hazardous wastes; and
- collecting registration fees and fuel taxes through which motor carriers reimburse states for their use of publicly maintained highways.

States, in cooperation with the motor carrier industry, have sought to ease the regulatory burden through uniform standards and procedures as well as through reciprocal and base state agreements. The desire of both states and the industry to make the regulation of motor carriers more efficient without compromising the performance of legitimate state government responsibilities has resulted in the following policies and programs.

- Uniform standards for on-site and roadside inspections developed through the Commercial Vehicle Safety Alliance (CVSA) have helped motor carriers by clarifying what is expected of them regardless of the state(s) in which they operate.
- Base state agreements for the proportional registration of commercial vehicles through the International Registration Plan (IRI') and the reporting of fuel taxes through the International Fuel Tax Agreement (IFTA) have eliminated the need for motor carriers to file multiple applications and reports.
- The recent implementation of the commercial driver license (CDL) ensures that a driver licensed in one state is deemed capable of driving in other states based on national standards.
- The Uniform Program for the base state registration and reciprocal permitting of hazardous materials transporters, recently piloted in four states, has the potential to reduce the paperwork and costs associated with individual state programs.

Although the implementation of base state and reciprocal agreements improves the administrative processes associated with state motor carrier registration and permitting programs, it raises many questions about on-road enforcement. In addition, the decentralization of information on the motor carrier industry complicates state infrastructure and emergency response planning.

Base state and reciprocal agreements have not resulted in motor vehicles being able to move seamlessly from one state to another, an objective that is a high priority for the motor carrier industry. In most cases, a vehicle must stop at each state border or port of entry for authorities to ascertain its weight and check its credentials. These multiple stops result in both lost time and productivity.

Concurrent with the development of base state and reciprocal agreements, new technologies have emerged that are designed to replace manual administrative processes with automated and electronic substitutes. Much of the fanfare surrounding these technologies has centered on their use for congestion management. Yet the ability to send and receive data from commercial vehicles traveling at highway speeds and to disseminate that information electronically can help make motor carrier regulation and enforcement more efficient and realize the industry's dream of a seamless national highway system.

The potential for improving commercial motor vehicle regulation depends on technologies that store, transmit, and distribute data. The feasibility of various ITS technologies is being evaluated through a series of operational tests funded by the U.S. Department of Transportation (USDOT). Addressing the technical feasibility of the technologies is only one of the challenges in implementing an ITS/CVO system. Instituting public policies and actions that resolve the human and institutional barriers to technology deployment may be the more difficult task.

Defining ITS/CVO

ITS/CVO is a collection of advanced information and communications technologies that support state administration and enforcement of motor carrier laws and regulations. ITS/CVO helps states in the effective administration of the following three regulatory functions:

- safety assurance-performance of drivers and inspection of vehicles;
- credential administration-processing of applications for registrations, permits, and fuel tax accounts; issuing of credentials: carrier reporting: and auditing; and
- commercial vehicle clearance-verification of credentials and weighing at weigh stations, ports of entry, mobile sites, and international border crossings.

In addition, the ITS/CVO infrastructure can be used by the motor carrier industry for fleet management, including dispatching and routing vehicles, as well as for monitoring performance.

The technologies that support ITS/CVO can be grouped into the following five categories:

- weigh-in-motion (WIM)-electronic scales embedded in highway surfaces that transmit the weight of vehicles to enforcement officials while the vehicle travels at mainline speeds;
- automatic vehicle identification (AVI)-transponders that serve as electronic license plates to identify vehicles at weigh stations or ports of entry;
- automatic vehicle classification (AVC)-system that identifies the number of axles and axle spacing;
- automatic vehicle location (AVL)-system that provides real-time information about a vehicle's position, which is obtained through a global positioning satellite (GPS) network: and
- two-way communication (TWC)-interactive onboard systems that transmit information about the performance of the vehicle and driver and receive instructions.

Each of these technologies is at different stages of testing and deployment. For example, several states are using WIM facilities to check for oversized/overweight vehicles while the vehicles travel at mainline speeds. TWC, which requires much more extensive onboard equipment and more sophisticated receivers, lags behind WIM and AVI in terms of operational testing and deployment.

The final piece of the ITS/CVO puzzle is the communications network that will receive, store, and distribute the information that is needed to make the determinations associated with vehicle clearance and safety. This information architecture, referred to as Commercial Vehicle Information Systems and Networks (CVISN), will give state regulators and enforcement officials access to the state and federal data repositories where critical information about each commercial motor carrier

and its vehicles and drivers is maintained. For example, by entering an identifier common to all of the linked information systems, a roadside inspector will be able to determine whether the vehicle is properly registered under IRP, whether the carrier has complied with IFTA reporting requirements, and whether the carrier has the necessary oversized/overweight and hazardous materials permits. The inspector also will be able to learn where and when the vehicle was last inspected by a CVSA-authorized inspector and whether that inspection resulted in an out-of-service violation.

Setting the Framework for State Policymaking

The eventual success of ITS/CVO as a major component of the nation's public infrastructure will be determined in two arenas. The technological issues will be resolved by the private sector with input from public officials. The lead on institutional issues lies with the public sector, with participation by the regulated industry and the vendor community. This report establishes the parameters for a national discussion on the institutional, human resource, and political issues associated with deployment of a national IVS/CVO program. Drawing on the experience of the eight ITS/CVO demonstration projects, this report:

- informs Governors and their transportation advisors about the potential of ITS/CVO to improve state regulation of the motor carrier industry while easing the financial and administrative burdens on the regulated carriers;
- articulates the major issues that will determine the future deployment and utilization of ITS/CVO technologies; and
- identifies specific actions that need to be taken before the potential benefits from ITS/CVO can be realized.

Information for this report was gleaned from a literature review, including a series of reports on state ITS/CVO experiences to date, state and regional institutional barriers reports funded by the Federal Highway Administration (FHWA), and a study of the costs and benefits of ITS/CVO to the industry prepared by the ATA Foundation, FHWA has contracted with the National Governors' Association (NGA) to conduct a similar cost/benefit analysis from the state perspective. The report will be released at the 1997 NGA Annual Meeting. In addition to the literature review, NGA held a roundtable involving state officials who have participated in the operational tests. (A list of the roundtable participants is found in the appendix.)

State Experience with ITS/CVO

Through a series of state operational tests and other federal initiatives, transportation officials and industry representatives have been able to refine their vision of what ITS/CVO can and should be. In addition, experience from the operational tests has identified specific institutional issues and barriers that must be addressed before a national ITS/CVO program can be deployed successfully. This chapter provides a brief description of state operational tests and initiatives that have been funded by the Federal Highway Administration. Of the eight operational tests, only one has moved to a deployment phase.

HELP/Crescent

In 1982 Arizona and Oregon transportation officials were looking for a better way to process trucks through ports of entry. This effort, initially funded with small grants from FHWA, evolved into a full operational test of ITS/CVO technology from 1990 to 1993 with participation by six states-Arizona, California, New Mexico, Oregon, Texas, and Washington (see Table 1). The project focused on monitoring oversized/overweight vehicles through the use of three ITS technologies:

- weigh-in-motion;
- automatic vehicle identification; and
- automatic vehicle classification.

Vehicle information is captured at one of thirty-three equipped sites along Interstate-5 on the west coast, or Interstate-10 or Interstate-20 in the southwest. The data are then uploaded to a central computer that regularly distributes vehicle information to the remaining sites. Each vehicle is equipped with transponders that identify the vehicle at mainline speeds. If properly permitted, the vehicle receives a green light signal to continue. Approximately 5,000 motor carriers participated in the operational test.

HELP/Crescent represented a true partnership between state regulators and the regulated industry. To oversee development of the project and future expansion, the participating states established a nonprofit entity, HELP Inc. The board of directors is composed of two representatives from each state-one from state government and one from industry. The responsibility for day-to-day management of the project lies with HELP Inc., staff located in Phoenix, Arizona. Central computer services are provided by Lockheed Martin IMS from its corporate facilities in Santa Clara, California.

Since completion of the operational test in 1993, HELP, Inc., has expanded both functionally and geographically. The latest effort, called Pre-Pass, includes electronic clearance for vehicle registration and fuel tax reporting. Ten states now participate in all or some of HELP, Inc.'s activities. In addition, HELP Inc., is the first ITS/CVO effort to move from federal grants to debt and venture capital as its

Table 1. Completed Multistate Operational Tests

Project	*Participating States*	*Application*
HELP/Crescent	Arizona, California, New Mexico, Oregon, Texas, Washington	Electronic clearance, bypass
Automated Mileage and State Border Crossing	Iowa, Minnesota Wisconsin	Electronic mileage tracking, state border crossing monitoring

source of funding. Revenues are generated from transaction fees assessed on carriers that benefit from the system. Each time a vehicle is successfully precleared at a weigh station or port of entry, the carrier is charged a transaction fee of ninety-nine cents. These revenues now cover only a fraction of HELP, Inc.'s operating expenses. Long-term projections suggest that as the functional value of the system expands with the participation of additional states, the effort will become self-sustaining.

HELP Inc., is the most mature example of state utilization of ITS/CVO in terms of both technology and organization. The lessons learned from this project are highlighted throughout this report.

Automated Mileage and State Border Crossing

The Automated Mileage and Stateline Crossing Operational Test (AMASCOT) evaluated a system that tracks truck mileage and state border crossings to facilitate faster and easier reporting to state regulatory agencies using global positioning satellite technology, The system automatically tracks and updates a truck's position, records interstate border crossings, and apportions actual mileage to each state driven. It then distributes the data to the carrier operations office for immediate processing into IFTA and IRP formats. Six carriers from three states-Iowa, Minnesota, and Wisconsin- participated in the project and traveled on taxable roads in the forty-eight contiguous states.

The completed operational test evaluation sought to answer the following questions.

- Can automation of fuel tax reporting satisfy IFTA and IRP reporting requirements?
- Can automation enhance the ability of state regulatory agencies to audit motor carrier records?
- Will automated fuel tax reporting provide time and cost savings to motor carrier operators?

Final evaluation results indicate that the project meets IFTA and IRP reporting requirements. Potential auditing benefits were identified, including higher reporting accuracy and cost savings from having to enter less data manually, Actual benefits would depend on other variables, however, such as staffing resources. Carriers identified significant potential cost savings from automated mileage and route data collection; they estimated that the savings could range from 33 percent to 50 percent of current IFTA and IRP administration costs. The system is now being introduced as a commercial product for motor carrier operators.

Advantage I-75

Advantage I-75 is designed to facilitate motor carrier operations by allowing transponder-equipped and properly documented trucks to travel any segment along the entire length of Interstate 75 (I-75) at mainline speeds with minimal stopping at weigh/inspection stations. Partners include Florida, Georgia, Kentucky, Michigan, Ohio, Tennessee, Ontario (Canada), the motor carrier industry, American Trucking Associations, National Private Truck Council, United Parcel Service, SAIC, Hughes, and the University of Kentucky (see Table 2). Currently operational, the Mainline Automated Clearance System (MACS) includes the use of three ITS technologies:

- weigh-in-motion;
- automatic vehicle identification; and
- automatic vehicle classification.

Vehicle information is captured at one of twenty-nine equipped sites along the I-75 corridor to identify participating trucks and check their weight and credentials. Electronic clearance decisions at downstream stations are based on truck size and weight measurements taken upstream and on computerized checking of operating credentials in each state. During the operational test, transponders are being provided to participating carriers at no charge. Approximately 4,000 transponder-equipped trucks are participating in the operational test. When MACS determines the

Table 2. Ongoing Multistate Operational Tests

Project	*Participating States*	*Application*
Advantage I-75	Florida, Georgia, Kentucky, Michigan, Ohio, Tennessee	Electronic clearance, bypass
Electronic One-Stop shopping	Arizona, Arkansas, California, Colorado Illinois, Iowa, Kansas, Minnesota, Missouri Nebraska, New Mexico, South Oakota, Texas, Wisconsin	One-stop multistate electronic purchase of credentials
International Border Electronic Clearance	Arizona, California, Michigan, New Mexico, New York	Electronic clearance
Out-of-Service Verification	Idaho, Minnesota, Wisconsin	Electronic out-of service monitoring and verification

validity of weight and credentials, the driver receives a green light and audible signal to bypass the station.

Scheduled for completion in 1997, the operational test will be evaluated in an effort to assess the following questions.

- Does mainline clearance produce significant time savings for motor carriers?
- Does mainline clearance produce significant fuel savings for motor carriers?
- What level of electronic clearance participation is required to reduce unauthorized scale bypasses on I-75?
- What level of electronic clearance participation is required to significantly reduce queue lengths at weigh stations along the I-75 corridor?
- What are the barriers that impede continued state deployment of electronic clearance after completion of the MACS test?
- What are the barriers that impede continued motor carrier participation in electronic clearance after completion of the MACS test?

The multijurisdictional policy committee governing the project is discussing alternatives for funding the project upon completion of the operational test phase. Three additional states-Indiana, Maryland, and Virginia—have expressed an interest in participating in the project after the test is completed.

Electronic One-Stop Shopping

Three electronic "one-stop shopping" operational tests are testing different approaches to one-stop, multistate electronic purchase and receipt of credentials from motor carrier facilities, permitting services, truck stops, and state agencies. Thirteen states are participating in three projects:

- HELP, Inc. (Arizona, California, and New Mexico);
- Midwest (Illinois, Iowa, Kansas, Minnesota, Missouri, Nebraska, South Dakota, and Wisconsin); and
- Southwest (Arkansas, Colorado, and Texas).

The primary objective of these tests is to evaluate improvements to state and motor carrier productivity from an electronic system that will make it possible for a motor carrier to apply, pay for, and receive all necessary credentials or permits electronically from either the base state or individual states through a single site. The credentials and permits available through one-stop shopping include:

- International Fuel Tax Agreement;
- International Registration Plan;
- oversize/overweight permits; and
- single state registration system.

These operational tests are scheduled to conclude and undergo evaluation in 1997. The evaluations will address the following questions.

- Can the implementation of a one-stop shopping system for the management of the commercial vehicle credential process result in improvements to the convenience, timeliness, and consistency of applying for and receiving credentials?
- Will motor carriers and state agencies accept electronic one-stop shopping services?
- Can the institutional issues involved in the implementation and use of a paperless credentialing method be overcome?

International Border Clearance

The international border clearance projects are designed to expedite commodity movements through the extensive use of electronic data interchange (EDI) and the automation of manual processes currently used to monitor commercial vehicle movements at the border. The projects are located at the following border crossings:

- Ontario/Michigan and New York Crossings;
- Otay Mesa/California Crossing;
- Nogales/Arizona Crossing; and
- Santa Teresa/New Mexico Crossing.

The projects include:

- integrated preprocessing of data for cargo, vehicle, and driver;
- electronic data interchange transfer of regulatory data;
- use of transponders and vehicle-roadside communications as a part of the line-release system;
- use of electronic seals to ensure cargo integrity: and
- use of traffic management systems to reduce overall delays.

These projects are scheduled for completion in 1997-98 and will be evaluated based on questions such as the following.

- Can advanced ITS technologies be applied in such a way to make it possible for commercial vehicles to cross international borders without stopping?
- Can common data elements and processes for the U.S. Customs Service, Immigration and Naturalization Service, and Department of Transportation be developed and implemented at international border crossings involving the United States, Canada, and Mexico?
- Will border inspectors accept electronic systems' verifications of cargo, driver, and vehicle inspections?

Out-of-Service Verification

The out-of-service tests combine the use of video technology and automated vehicle identification technologies to monitor vehicles placed out of service for safety violations and reduce the number of out-of-service vehicles on the road before safety violations have been corrected. Three states are participating in the tests-Idaho, Minnesota, and Wisconsin. In Idaho video technology is used at the port of entry to monitor vehicles placed out of service, because the ports are not manned on a twenty-four-hour basis. The video technology maintains surveillance on out-of-service drivers and vehicles and notifies the state police if a vehicle moves from the site. In Minnesota and Wisconsin, AVI technologies identify vehicles at four inspection stations and use real-time access between weigh stations and a central database to identify out-of-service vehicles. When a match is found, the system sounds an alarm to notify inspectors.

Evaluations for these two projects are designed to answer the following questions.

- Can automated electronic enforcement practices for commercial vehicles improve overall compliance?
- Can electronic enforcement improve the efficiency and effectiveness of inspection staff?
- Is out-of-service electronic enforcement a viable function that will promote the advancement of automated weigh stations?

Commercial Vehicle Information Systems and Networks

Commercial Vehicle Information Systems and Networks is an FHWA initiative that refers to the ITS systems elements that support CVO. It is not a new information system but a concept of using existing information systems owned and operated by state and local governments, carriers, and other CVO stakeholders to foster a crash-free environment and enhance performance-based safety management for the public and private sectors. The CVISN core infrastructure is a selected group of key CVO information systems that provide a mechanism for the exchange of safety, registration, fuel tax, hazardous materials, and commercial driver license information among states (see Table 3).

CVISN deployment is comprised of five major steps. The first step was to develop management plans and technical frameworks necessary to coordinate the program. The second step was to develop prototypes to demonstrate the operational concepts. The prototype states are Maryland and Virginia and both have held "showcases" to demonstrate the various ITS/CVO technologies in a live environment. The third step is a pilot phase in which eight additional states-California, Colorado, Connecticut, Kentucky, Michigan, Minnesota, Oregon, and Washington-in seven regions throughout the nation will participate in systems development. Each state was awarded $1 million in matching grants for a two-year period. The fourth step will partner each pilot state with another state in its region, and the final step is to expand the project to all interested states.

Mainstreaming

Another federal initiative to incorporate ITS/CVO into state transportation planning is know as "mainstreaming." The objectives of the initiative are to:

- incorporate ITS/CVO more fully into state and metropolitan transportation planning activities;
- coordinate ITS/CVO activities among agencies and states; and
- explain the ITS/CVO program to key decisionmakers in the public and private sectors.

The mainstreaming initiative began in September 1996, with thirty-three states comprising seven regional consortia receiving grants. Each state received $30,000 in federal matching funds to support the development of ITS/CVO business plans with specific projects, milestones, and responsibilities. Each of the seven regional consortia was awarded up to $180,000 to fund the appointment of a

Table 3. Ongoing Federal Initiatives

Project	*Participating States*	*Application*
Commercial Vehicle Information Systems and Networks (CVISN)	California, Colorado, Connecticut, Kentucky, Maryland, Michigan, Minnesota, Oregon, Virginia, Washington	Safety information exchange, commercial vehicle administrative processes, electronic clearance, international clearance, automated roadside inspection, onboard safety monitoring, hazardous material incident response, fleet and freight administration
Mainstreaming	California, Colorado, Connecticut, Delaware, Georgia, Idaho, Indiana, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, New Jersey, New York, North Carolina, Ohio, Oregon, Pennsylvania, Rhode Island, South Dakota, Tennessee, Utah, Virginia, Washington, West Virginia, Wisconsin, Wyoming	All ITS/CVO user services

full-time program director, the development of a regional ITS/CVO business plan, and the establishment of a regional CVO forum.

Under this initiative, the following types of activities will also be conducted:

- support for state and regional working groups composed of representatives of key public and private sector CVO stakeholders;
- benefit/cost analyses and other technical studies that provide supporting information for deployment planning activities; and
- outreach to, and education of, state and industry stakeholders to increase awareness of, and support for, ITS/CVO activities.

The mainstreaming initiative will share progress and lessons learned during the CVISN model deployment among the states and incorporate CVISN planning requirements into agency business plans.

Summary

The operational tests and demonstration programs have served two valuable purposes. First, they have tested the technical feasibility of various ITS/CVO technologies. More important, however, they have identified institutional barriers and issues that must be addressed before large-scale deployment of ITS/CVO is possible. Experience from these tests provides the basis for developing the institutional and political framework that will be required before the full potential of ITS/CVO can be realized. The following chapters detail the organizational, financial, and human resource issues associated with ITS/CVO deployment and the Governor's role within an ITS/CVO implementation framework.

State Realization of the ITS/CVO Vision

The compelling issues associated with full deployment of ITS/CVO are economic and institutional issues, not technological issues. Support for a national ITS/CVO system will depend on public policies and actions that address each of these market, fiscal, and organizational considerations. The issues fall into the following general categories:

- the demand for ITS/CVO;
- investment and revenue requirements;
- coordination and standards; and
- miscellaneous issues (e.g., privacy concerns).

This chapter examines specific issues and barriers within each of these categories and, to the extent possible, provides policy options that have emerged from the operational tests.

The Demand for ITS/CVO

The Intermodal Surface Transportation Efficiency Act of 199 1 (ISTEA), the enabling legislation supporting ITS/CVO does not contain mandates for either public or private utilization of intelligent transportation technologies. Widespread deployment of ITS/CVO on a voluntary basis, including public and private investment in the required infrastructure, will depend on whether ITS/CVO provides benefits for regulators and the regulated industry that justify their investment in the technologies.

State Perspective

State support for ITS/CVO depends on whether the system helps state government address three policy objectives. First, does ITS/CVO improve the state's business climate by reducing the administrative and financial burdens on motor carriers and facilitating the movement of raw materials, supplies, and manufacturing products through the state? Second, does ITS/CVO result in more effective regulation of the motor carrier industry, including compliance with state registration, taxation, and safety requirements? Third, can ITS/CVO result in cost savings without compromising the other two policy objectives?

It is the melding of these three policy objectives that will determine whether states invest in ITS/CVO technologies. According to Minnesota transportation officials, "The trade-off from the perspective of states may be difficult to define. Cutting state administrative costs may not be sufficient if change does not advance or compromises other objectives, such as preserving a competitive environment or public safety. Further, it is not sufficient for state agencies to profess a 'customer service' objective if they have not also answered the question 'at what cost?'"

There is significant variance among states concerning the importance of the range of ITS/CVO services. For example, Texas does not haveports of entry and does not permanently staff its weigh stations. The Texas enforcement framework relies heavily on roadside inspections and random spot checks. Major investments in port-of-entry or weigh-station facilities for preclearance would be inconsistent with the state's current enforcement philosophy.

Industry Perspective

From a motor carrier's viewpoint, the theoretical benefits of ITS/CVO deployment include reduced administrative costs, higher productivity, and better fleet management. According to the America Trucking Associations (ATA), "Using advanced technologies to ensure compliance with state regulations could substantially benefit commercial vehicle operators. Requiring fewer stops could reduce travel time, increase productivity, save fuel, and reduce emissions."' The extent to which

theoretical benefits result in real savings and higher productivity varies, however, among different carriers based on factors such as fleet size, the type of commodities transported, and the carrier's current use of automation and onboard electronics. It also depends on whether ITS/CVO can be integrated with the carrier's existing systems.

Experience from the operational tests, the ATA Foundation survey of motor carriers, and the state institutional barriers studies all suggest that the answer to the benefits question is more complex than expected. For example, the conventional wisdom among ITS/CVO advocates was that the technologies would benefit larger carriers more than smaller carriers. This assumption was based on two factors. First, the more complex management requirements associated with larger fleets beg for automated solutions. Many companies have already installed onboard computers, cellular phones, and transponders. For example, DuPont is increasing its use of automation to facilitate interstate movement of products and supplies, weighing, certification, calculation of tax liabilities, and response to hazardous materials incidents.

Second, it was assumed that the productivity of each truck would increase as a result of less downtime while a vehicle was weighed or inspected. The economic benefits to a carrier therefore would be directly proportional to the number of vehicles in the carrier's fleet. This assumption overlooks the infrastructure that large carriers have built to support their operations. In particular, most large carriers have established a network of terminals that facilitate the long-distance transport of goods and the delivery of these goods to the local market area. The location of these terminals is often based on the distance that a driver is expected to cover in an average workday, including the necessary stops to meet regulatory requirements and rest. Even if ITS/CVO technologies save the driver thirty to sixty minutes, the vehicle must still terminate each leg of its route at a terminal.

In contrast, a smaller carrier that may be handling a point-to-point delivery may be able to cover an additional thirty to sixty miles as a result of the time savings at the weigh station or port of entry. Unhampered by the need to end its day at a designated point, the small carrier can increase the revenue generated per vehicle per day.

These differences among carriers have implications for the ways that states generate demand for ITS/CVO utilization, According to Minnesota transportation officials, "[commercial motor carriers] are a diverse group, and providing adequate motivation for them to participate in such efforts will require focused communications programs outlining the costs and benefits of proposed changes."*

State officials also have to take into account the differences between freight and passenger carriers. Although freight carriers place a high priority on ITS/CVO services that alleviate the need for frequent visits to state offices, the passenger carrier industry does not place the same importance on this service. Survey responses from passenger carriers suggest that they are able to organize their business transactions to minimize the need for such visits. Similarly, the importance of preclearance services increases for motor carriers for which time sensitivity is a major competitiveness or productivity issue.

In addition, industry demand neither is constant across all ITS/CVO services, nor is there a consensus among motor carriers that their deployment of ITS/CVO technologies will reduce costs. Research conducted by the Washington State Transportation Center at the University of Washington found that although most motor carriers agree that ITS/CVO is a good thing, "these firms are reluctant to press for the 'whole' system, as many of the benefits from ITS/CVO technology will not directly improve their bottom line."[5] Similarly, in response to a survey of motor carriers conducted by Ohio State University for the Ohio Department of Transportation, many interviewees voiced their belief that ITS/CVO innovations could

actually increase their cost of operations.' As part of their motor carrier survey, Minnesota officials looked at the perceived value of electronic data exchange as an alternative to physical visits to state administrative offices. Respondents indicated that they visit the Minnesota Administrative Truck Center an average of seven times a year and a state or deputy registrar an average of five times a year. With better communications, the respondents suggest that as many as 25 percent of these visits could be eliminated.[7]

Differences among motor carriers make it extremely difficult to calculate a single cost/benefit ratio that covers the entire industry. The benefits also vary across ITS/CVO user services. A carrier that can utilize the time savings from preclearance to complete an extra delivery every day may see a significant return from the investment of transponders on its fleet. In contrast, a carrier that is able to complete a point-to-point delivery fifteen minutes faster may not generate additional revenues from the time savings to justify the investment in ITS equipment. This situation led Idaho transportation officials to conclude that "the industry is unlikely to push, as an industry," for ITS/CVO deployment.[8]

To date, there is little evidence of broad-based industry support for ITS/CVO. According to the western states' institutional barriers study, "In most of the participating states, the active constituency advocating implementation of transparent borders is small or nonexistent."' This support will emerge only if the industry views ITS/CVO deployment as helping motor carriers operate more efficiently within an increasingly competitive marketplace. Equally important, support will not result from promises of ITS benefits.

Whether industry sees ITS/CVO as meeting their needs may depend on two factors. First, does the financial return from investment in ITS/CVO services translate into real savings? For example, if onboard equipment reduces the probability of accidents, will the industry realize savings in liability and disability insurance costs? Second, industry support increases if ITS/CVO investments serve multiple purposes, including freight mobility and compliance with state regulatory requirements. States' ability to increase demand for ITS/CVO will depend on whether states focus on the benefits that are most important to the industry.

Since the use of ITS/CVO technologies by states or the motor carrier industry is voluntary, it is critical that states determine the demand for ITS/CVO within the regulated community before making investments in ITS/CVO services. Within a voluntary framework, it is possible that the administrative savings associated with ITS/CVO may not be fully realized if a state is forced to maintain a parallel, manual regulatory system to accommodate carriers that elect not to employ the technology.

Mutual Interests

Support for ITS/CVO services is more likely to be generated when state regulators and the industry can agree on program objectives. One area in which this is clearly the case is vehicle and driver safety. According to Idaho transportation officials, "Both the trucking industry and state agencies have a strong interest in the safety of their trucks and the effectiveness of safety programs. . . . While truck accidents are a small portion of all accidents each year, truck accidents tend to be more costly, more visible, and more likely to cause serious injury or death."" Similarly, California Highway Patrol officials characterized the mutual benefits of Pre-Pass "as streamlining the movement of commercial vehicles without compromising public safety."' 1Even in these cases, however, industry support for ITS/CVO is tentative if motor carriers believe that implementation of ITS technologies will hurt their competitive position in the marketplace through excessive costs or additional regulatory requirements.[12]

Costs and Financing

In states that have conducted attitudinal surveys about the value of ITS/CVO user services, the overwhelming concern is whether

the benefits from deployment of the associated technologies clearly outweigh the investment in the systems. These findings mirror the findings from surveys of the motor carrier industry. For this reason, FHWA has contracted with NGA to conduct a cost/benefit analysis of ITS/CVO deployment from the states' perspective (see Figure 1).

The importance of reliable information about the costs and benefits of ITS/CVO technologies was noted in several of the state institutional barriers reports. For example, the Ohio report states, "The major impression we had after these interviews [with state officials] was that the agencies would not be against any CVO innovation that made economic sense and was supported by the motor carrier industry."[13] Although other institutional barriers might delay implementation of an ITS/CVO environment, little if any support would be forthcoming without evidence that the investment in technology and required regulatory adjustments made economic sense. Equally important, it seemed unlikely that any senior state official, including the Governor, could champion ITS deployment in the face of negative returns.

Unfortunately, the nature of most ITS/CVO operational tests and demonstrations, which focus on specific activities within an ITS/CVO framework, means that there is little evidence on the cost of total implementation of the system. Certain cost elements for both state administrators and the motor carrier industry, however, have been identified. These include:

- investing in information and data processing systems and the communications network to transmit the data among states, among state agencies within each state, and to roadside enforcement officers;
- programming to upgrade existing systems and make them consistent with adopted national standards;

Figure 1. National Governors' Association ITS/CVO Cost/Benefit Analysis

In April 1996 the Federal Highway Administration contracted with NGA to study the costs and benefits associated with state deployment of ITS/CVO technologies for the purpose of regulating the motor carrier industry. To ensure that the project accurately reflects state needs, NGA has assembled a technical advisory group (TAG) to assist in the design and oversight of the study. Members of the TAG include state officials who have been active participants in the ITS/CVO operational tests or have responsibility for various aspects of state motor carrier regulation, such as taxation or hazardous materials. The formal membership is supplemented by resource people from the motor carrier industry and the vendor community.

At its initial meeting on August 8, 1996, the TAG established the following framework for the cost/benefit analysis.

- The differences among states in terms of regulatory frameworks and cost structures make it impossible to conduct a national cost/benefit analysis that accurately reflects the conditions in a specific state.
- States would be better served if NGA developed a cost/benefit methodology and made that available to states to generate their own numbers.
- To test the methodology and provide some analysis of the costs and benefits to states of ITS/CVO technology, NGA would generate cost/benefit information for a representative sample of states,
- The methodology should, to the extent possible, avoid speculation about potential ITS/CVO costs and benefits. It should take into account only those assumptions that are supported by the operational tests and other demonstration projects.
- The final report should include a spreadsheet model and documentation of the methodology that can be used by any state to obtain a better understanding of the benefits and costs within that state.

The cost/benefit report will be released at the 1997 NGA Annual Meeting in July.

- installing transponders and receivers for commercial motor vehicles:
- providing additional equipment (e.g., laptop computers) to law enforcement officers and field inspectors; and
- providing marketing and education programs to make the regulated industry aware of and comfortable with ITS/CVO procedures.

Perhaps more important than the cost of deploying ITS/CVO is the allocation of costs among states and the federal government and between the public and private sectors. The relationship between the costs to various participants and the direct benefits they receive from their investments will determine their willingness to contribute to any financing scheme. For example, representatives of the Missouri motor carrier industry indicated that they believed the state would realize more benefits from ITS/CVO services than the industry. They therefore are reluctant to bear the financial burden of paying for ITS/CVO implementation.[14] In addition, there are differences of opinion between sectors of the motor carrier industry. In terms of state regulatory reform, most shipper/carriers (i.e., companies that transport products that they manufacture) view ITS/CVO as a low priority. These carriers place more importance on state and federal regulatory reform related to employment and environmental factors.[15]

To develop a financing allocation plan that has broad-based support throughout government and the industry, advocates of deployment of a national ITS/CVO system must address the following issues.

- What elements of the system represent the national interest and should be funded through federal mechanisms?
- Is the system a public good? If so, does investment in the system by some states and some carriers create a public infrastructure that others can use without contributing?
- Do the productivity increases for the motor carrier industry justify a fee structure and rates that cover the system's long-term operating and maintenance costs?
- Can states develop fee structures that clearly tie costs to the benefits received only by those carriers that pay the fees?

Participants in the western states' institutional barriers study suggest that it is not a question of whether the resources exist for states to finance ITS/CVO systems. It is a question of making such investments a priority. "None of the states participating in this study lacks the resources to build the transparent borders system. The necessary resources are available as part of the USDOT funding allocated through ISTEA, in combination with the resources currently available to the individual states. However, each of the participating states has considerably more funding needs than available resources, and the transparent border systems must compete with these other funding requirements."[16]

It is unlikely that states would increase revenues through fees or taxes to finance ITS/CVO systems, particularly in the current environment of downsizing state government and reducing tax rates. Legislatures might only be receptive to increasing revenues if the industry sponsored the financing package based on its belief that ITS/CVO deployment would result in reduced operating expenses that more than offset any increase in public taxes or fees. A more likely scenario is the shifting of appropriations from one budget category to another (e.g., from salaries to information systems).

Not withstanding better fuel tax enforcement as a result of electronic clearance of vehicles, none of the states currently participating in the operational tests view enhanced revenue generation as an objective of ITS/CVO deployment. It is likely that state implementation of the technologies will be limited to the current revenue base. Decisions to shift funds that may currently pay for personnel and other non-ITS expenses will depend on the extent to which investment in ITS/CVO technologies permits more effective enforcement with the same amount of funds.

Advocates of ITS/CVO within state government face two problems. Historically, state regulatory and enforcement agencies have little, if any, discretionary funds within their budgets. Tests and demonstrations of ITS/CVO divert resources from core agency functions. If the regulatory function is housed within the larger state transportation department, which may have discretionary funding, it may not be able to compete against the use of such funds for more visible infrastructure improvements that also garner broader political capital.

There are ways that states can direct additional resources to ITS/CVO services without increasing fees or taxes on the motor carrier industry. For example, some states view regulatory violations such as unpermitted overweight vehicles as criminal violations. Fines and forfeitures resulting from these violations currently are deposited in accounts under the jurisdiction of the court system. By designating such violations as civil rather than criminal violations, the resulting revenues could be dedicated to ITS/CVO improvements and operations.

Industry Financing

The willingness of industry to contribute to the initial and ongoing costs associated with ITS/CVO is directly related to the perceived benefit. Feedback from the state institutional barriers studies and the ATA-sponsored cost/benefit analysis suggests that there are still unanswered questions on the benefits of these new technologies. For example, in the 1994 institutional barriers study, Missouri transportation officials found that there was a "lack of support from the motor carrier industry for the implementation of ITS/CVO technologies because of uncertainty regarding the potential benefits."[17] This does not mean that Missouri motor carriers are averse to further examination of the benefits of ITS/CVO as evidenced by the industry's support for the state's participation in the CVISN pilot program.

One example of industry support for a user fee is being tested through the Pre-Pass program administered through HELP, Inc. Each time a commercial vehicle takes advantage of the electronic credential check, rather than having to stop for a manual inspection at a weigh station or port of entry, the motor carrier is charged a fee of ninety- nine cents. The fee schedule was adopted by the HELP, Inc., board of directors, which includes an industry representative from each of the participating states. It is too early to determine whether the fee structure will encourage enough carrier participation to cover the system's costs. This effort is consistent with the recommendations of the western states' study, which noted that one approach to financing ITS/CVO activities is "to work with industry to determine whether increased automation would increase industry productivity to warrant new, dedicated temporary fees for implementation.""

Summary

It is difficult to draw conclusions from the evidence to date concerning the inclination of states or the motor carrier industry to invest in ITS/CVO technologies. Most of the operational tests and demonstrations have been heavily subsidized with federal funds or financed through injections of venture capital by private investors. The magnitude of investment required for deployment of a national ITS/CVO system and the political pressures to reduce federal spending will require that ITS/CVO advocates identify other consistent sources for system financing. The extent to which Congress supports intelligent transportation efforts and CVO projects in the forthcoming reauthorization of the surface transportation act may affect the environment in which state ITS/CVO investment decisions are made.

In addition, it is difficult to price ITS/CVO services because the operational tests included research and development costs. These costs should decrease as standards are adopted and competition among manufacturers of onboard equipment increases. Despite these caveats, the ultimate decision by states and the industry to invest in ITS/CVO will depend on the cost/benefit ratio. From the industry perspective, benefits can be objectively calculated in

terms of reduced operating expenses and new revenues that affect a company's bottom line.

From the state viewpoint, investment in ITS/CVO will depend on a combination of fiscal and programmatic objectives. At one level, state officials will look for administrative savings and operational efficiencies resulting from ITS/CVO services. They will also assess the impact of ITS/CVO deployment on other state policy goals, such as increasing highway safety and promoting economic development within the state.

Standards and Interoperability

Although state officials and industry representatives have identified ITS/CVO issues on which they disagree, consensus has emerged in the area of standards and interoperability. The vision of transparent borders will never be realized if states and agencies within states cannot share data electronically. Equally important, the industry will not support ITS/CVO deployment if it is required to invest in redundant onboard systems to satisfy states' differing technical requirements.

Much has been done to resolve these issues. As part of the CVISN design process, states are working with the U.S. Department of Transportation to develop ED1 transaction sets to share information about registration, taxation, and permits. In addition, after several years of controversy concerning transponder specifications, states participating in the operational tests and demonstrations have now decided on a standard transponder design that meets the technical requirements of most ITS/CVO applications.

Several issues have not yet been resolved. For example, provisions of the North American Free Trade Agreement (NAFTA) related to surface transportation may require additional discussions with Canadian and Mexican counterparts related to standards and interoperability. Moreover, carriers involved in multimodal transport have urged that compatibility standards extend beyond motor carrier requirements to cover rail and air transport.

Although state CVO administrators acknowledge the need for a single set of standards and for equipment capability, they point out that their ability to meet this standard is sometimes beyond their control. For example, Minnesota officials note that coordination among state agencies is hampered by the legislative mandates under which the agencies operate. These mandates seldom include coordination among agencies or states as a priority or even a consideration. Similarly, some states' ability to participate in national programs is restricted by state procurement regulations.

Resolving the standards and interoperability issues has two implications for the acceptance and use of ITS/CVO services by states and the industry. Many states admit deferring action until they are confident that any investments in ITS technologies are consistent with national standards. In discussions with neighboring states, Texas officials found that "many states have expressed a reluctance to implement ITS technology until standards are established for equipment such as AVI."[19]

Standards and interoperability issues also represent a major political and credibility issue for many states. As an Idaho official said, "Imagine the furor if I got all of the truckers in my state to put on transponders, which I could probably do, and six months later FHWA, or some other organization, decides that transponder B will be the national standard. It would never be remembered that I pushed the industry forward, or that I built a functioning system. It would only be remembered that I made the trucking industry bend over backwards and then had to go back to [it] again."[20]

The industry is expressing similar concerns. In several of the state motor carrier surveys, companies said that their interest in ITS/CVO will increase once they are assured that any investment in onboard equipment would follow technical qualifications that are used by all states. Motor carriers that had already invested in onboard equipment for their own purposes (e.g., fleet management) have urged state officials to adopt open standards that are not

equipment-specific. Findings from the Illinois motor carrier survey suggest the "need for an expandable open system architecture that can utilize what companies already are using . . . . Systems should be easily upgradable."[21]

An underlying question is whether the introduction of ITS technologies and electronic data interchange will provide the impetus for achieving these standards. The desire for national standards did not arise with the introduction of ITS/CVO The western states' institutional barriers report points out that "the inefficiencies arising from the lack of standardized procedures and uniformity in regulatory requirements has been a focus of the federal government, state governments, and the motor carrier industry since the early 1960s. However, the fact that limited progress has been made over the last thirty years indicates the persistence and resilience of the institutional barriers confronting transparent borders."[22]

Regulatory Reform

Some members of the motor carrier industry are concerned that ITS/CVO could distract states from undertaking more important regulatory reforms. Results from New Mexico's motor carrier survey suggest that "carriers want [governments] to improve the efficiency of their current regulatory process before taking on new initiatives. Automation of otherwise inefficient processes is not the answer."[23] There is a real danger that states may view ITS/CVO as an end rather than as a tool through which they can achieve true regulatory reform. Reform is needed regardless of the infusion of ITS technology.

A more appropriate approach is to focus on specific elements of state motor carrier regulation and evaluate the options that are available as a result of emerging technologies. For example, large motor carriers often complain about the additional expense of registering new vehicles as a result of fleet turnover. Minnesota addressed this concern by developing procedures under which the carrier could retain the license plate, transfer it to a new vehicle, and provide the department of transportation with information on the new vehicle. None of this required ITS technologies. However, the benefits of this regulatory change would be greater if the carrier could provide the information electronically and if the new information could be readily available to enforcement officers who otherwise might issue a citation based on out-of-date information.

Another example of reform is the opportunity to eliminate much of the paperwork that currently must be kept in the cab of each commercial vehicle. With the adoption of a single identifier for each vehicle-for example. the manufacturer's vehicle identification number-retrievable online information can provide enforcement officers with more comprehensive and up-to-date information on each vehicle. Updating information online also represents a significant cost savings to the industry. A national motor carrier spends thousands of dollars distributing credentials to its fleet. With online documentation, these periodic mailings could be completely eliminated.

Regulatory reform to accommodate ITS/CVO may have substantial implications for states. Some states indicate that regulatory reform will require a thorough review of state statutes that mandate specific administrative procedures and standards. In its institutional barriers report, Nebraska officials identified an initial list of statutory mandates that would require modification. For example, Section 325 of the Nebraska ***Revised Statutes*** states that "no person shall operate a vehicle unless such vehicle shall at all times carry in or upon it the registration certificate furnished for it."[24] Although the term "certificate" could be defined to include a transponder that accesses the registration certification, state officials suggest that amending state statue is necessary to avoid future legal challenges.

A similar review of Iowa's state laws, rules, and procedures found "thirty-nine instances in the law, seventy-five in the rules, and twelve in procedures where electronic or automated processing methods may violate current law or

rules."[25] For example, Section 321.20 of the Iowa Code requires that a motor vehicle registration application include the "owner's signature written with pen and ink."

New Regulatory Paradigm

Implementation of ITS/CVO provides states the opportunity to completely revamp their regulatory philosophies. In many states, the regulatory framework calls for the state to conduct a cursory review of all motor carriers through compliance reviews and inspections on the roadside or at weigh stations and ports of entry. Many state officials suggest that it would be better to direct regulatory enforcement efforts to carriers that have unsafe operations or that attempt to circumvent regulatory requirements. ITS services such as preclearance enable states to adopt a different regulatory approach.

ITS/CVO builds a relationship between the industry and its regulators in which both acknowledge and contribute to each other's needs and objectives. For example, the industry lists seamless passage across state lines among its highest priorities. Allowing a vehicle to enter the state without being subjected to regulatory scrutiny requires confidence among state offtcials that the carrier is in compliance with regulatory and fiscal requirements. As stated in the New Mexico institutional barriers study, "Clearing compliant commercial vehicles through state ports of entry and weigh stations is the cornerstone of the transparent borders concept."[26]

The reward of seamless passage across state lines gives the carrier an incentive to do what it can in support of state objectives such as highway safety. In this sense, ITS/CVO provides an opportunity to empower motor carriers through incentives rather than sanctions. The way the state communicates its objectives when using any ITS technologies is important in garnering industry support for ITS initiatives. Texas officials found that industry support "will not be gained if the program is viewed primarily as an enforcement or revenue enhancement tool."[27]

Other Institutional Barriers

States identify several other barriers that may affect their ability to deploy ITS/CVO technologies.

Confidentiality of Information

ITS/CVO systems are information-intensive. Some data are provided by the carrier, including vehicle number, driver, and shipment information. Other information is generated by the systems. For example, onboard transmissions to receivers at weigh stations and ports of entry create electronic logs of times and locations. Some motor carriers have raised issues concerning the use of ITS/CVO information for purposes other than motor carrier regulation.

In addition, some carriers fear that ITS/CVO systems may increase regulation of the motor carrier industry because certain information may be more readily available. In its survey of motor carriers, Illinois officials found that motor carriers are concerned that they will be asked to "reveal information that other industries or transportation modes do not have to reveal."[28]

Concerns about confidentiality of information, especially when data are shared among states to support seamless highways, are tied to differences in state laws pertaining to freedom of information. For example, Minnesota has one of the most stringent freedom-of-information acts. In contrast, Ohio holds public employees personally liable for divulging business information that is gathered by the state for regulatory purposes. Which statutes govern information gathered in Ohio that may have been shared with Minnesota officials? In the New Mexico survey of motor carriers, the industry expressed a concern "regarding the distribution of data and protection of carrier privacy if ITS/CVO initiatives lead to widespread data sharing."[29]

During the development of its Pre-Pass program, HELP, Inc., examined several options for controlling the storage and distribution of information. Based on strong preferences expressed by industry, the board ultimately

elected to contract with a third-party vendor to collect tax and registration information from the participating states and distribute it to the checkpoints within the HELP, Inc., system. The use of a contractor also allayed industry concerns about freedom-of-information act requests.

Accuracy of Information

Electronic monitoring of motor carriers raises a number of issues related to the use of the data to enforce statutes and regulations. For example, is information about a commercial vehicle's weight generated by weigh-in-motion technology accurate enough to issue citations? When using electronically generated data, there is a need to establish thresholds above which violations will be deemed to occur.

The California Highway Patrol elected to use WIM technology as the mechanism to screen for violations, rather than as the basis for citations. When the reading from a WIM facility identifies a potential violation, the commercial vehicle is then stopped and weighed on a stationary scale to obtain the official weight for purposes of issuing the citation.

The use of pen-based computers for inspections has increased the accuracy of the data maintained within state and national databases in a number of ways. For example, the direct entry of pen-based computer information alleviates errors caused during transcription of illegible notes. In addition, the data are immediately entered into the database, making responses to queries more up-to-date.

Industry Concern Over Additional Taxation

Industry support for regulatory reform using ITS/CVO technologies is tempered by lingering concerns that states will use data generated by the system to change the way commercial motor carriers are assessed for their use of the nation's highways. The same information that can be used to preclear commercial vehicles can also be used to calculate weight-distance taxes. Even if the state argues that any shift in tax structure would not result in a net increase in revenues, there would certainly be a gross shift among different categories of motor carriers.

Human Factors

In the institutional barriers studies, several states note that there is a lack of skills associated with designing and maintaining ITS/CVO systems. State investment not only must focus on hardware and programming, but also on personnel and training. Such human resources investment may be difficult to achieve within current budgets, especially if the regulatory agency is expected to maintain existing service levels during the transition period.

Automation also raises concerns about downsizing and staff restructuring. These concerns can be addressed by involving union representatives in the development of in-service training programs.

Aversion to Change

Despite complaints about overregulation of the motor carrier industry, the industry acknowledges that many of the most burdensome regulatory requirements have been addressed through programs such as CDL and agreements such as IRP and IFTA. Many of the state motor carrier surveys suggest that the industry may not want to tinker further with a system that is perceived as working fairly well.

The Governor's Role within an ITS/CVO Implementation Framework

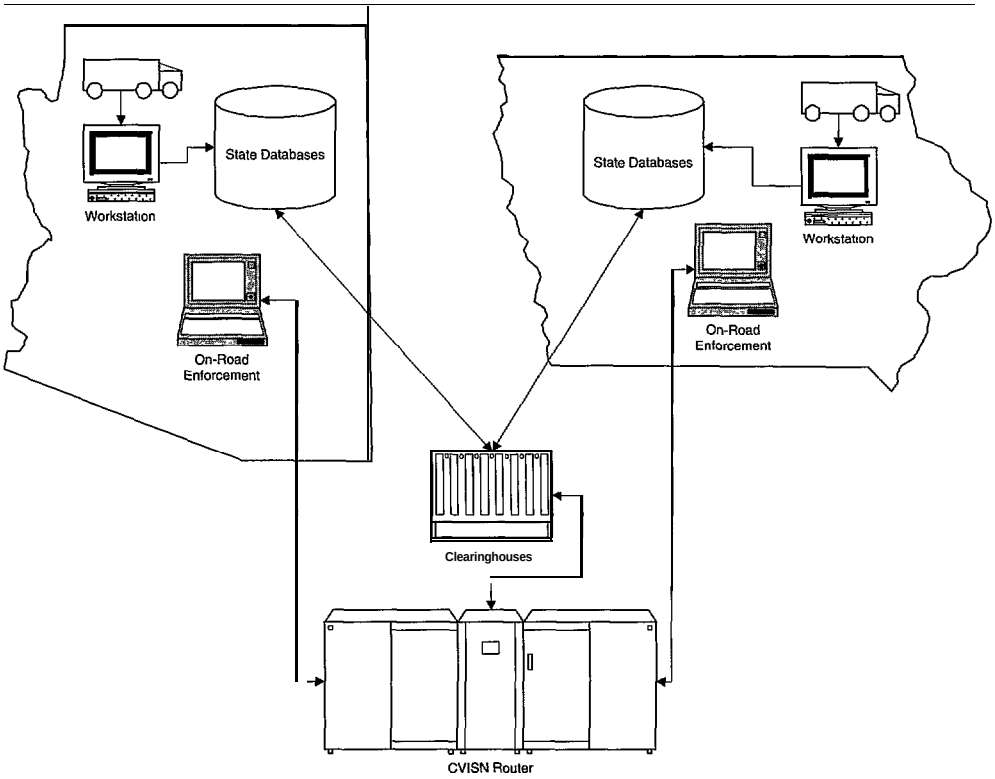
The evolution from discrete operational tests to national deployment of ITS/CVO will depend on overcoming the issues and barriers discussed in the previous chapters. The organizational framework through which these public policies are addressed and corresponding programs are developed is both vertical (i.e., intergovernmental) and horizontal (i.e., interagency and interstate). In addition, the necessary partnership between the public and private sectors makes the organizational framework for implementation complex (see Figure 2).

This multidimensional approach to ITS/CVO deployment cannot occur by accident. It will take public leadership at both the state and federal levels, as well as the concerted efforts of industry champions, to bring together the various elements on which ITS/CVO deployment will depend. Within each state, only the Governor has the breadth of authority to ensure successful collaboration. This does not mean that deployment can be mandated by gubernatorial decree. It means that the Governor is in a unique position to create the climate for collaboration that is essential to national deployment. That collaboration must occur among states, among state agencies, between levels of government, and with the motor carrier industry and ITS technology vendors.

Gubernatorial intervention is needed to address the major policy issues raised in this report, including:

- generating the demand for ITS/CVO deployment by the regulated industry and state administrators that will justify investment in the technologies;

Figure 2. ITS/CVO Organizational Framework



- exploring innovative methods of financing the initial investment in ITS/CVO infrastructure and methods for recapturing the ongoing expenses of operating the system;
- promoting collaboration among all the public and private stakeholders to resolve issues of interoperability; and
- overcoming the human and institutional barriers that can impede the changes in policies, programs, and organization that may be required.

The Governor need not become proficient in the technical aspects of ITS/CVO. The Governor's primary role is one of change agent, clearly articulating the state's policy goals and expectations and creating an effective system of rewards for those who contribute to the effort.

Generating Demand

Although there are legitimate questions about the benefits and costs of ITS/CVO services, it would be unfortunate if the answers to these questions were prejudiced as a result of unfounded concerns or preconceptions within state agencies and the motor carrier community. The Governor has the opportunity to ensure that ITS/CVO gets a fair hearing within the state by creating a process that engenders confidence in the outcomes of the process. For example, the Governor can clearly articulate the state's goals and objectives (e.g., for regulatory reform or highway safety). In addition, the Governor can establish principles to guide the process that allay industry fears about state motives for implementing ITS/CVO. These guiding principles could include the following.

- State decisions on ITS/CVO utilization and deployment will be based on objective cost/benefit analysis.
- Selected ITS/CVO services, at a minimum, must have no negative fiscal impact on the regulated industry. Decisions will be based on real cost savings and real increases in productivity.
- The state will not initiate any ITS/CVO effort that is inconsistent with nationally adopted standards.

By acknowledging these industry concerns up front, the process can then focus on critical issues such as financing, privacy, system reliability, and the impact of ITS/CVO on legitimate state regulatory objectives.

Addressing Institutional Barriers

A Governor who decides to champion ITS/CVO needs to be realistic about the challenges of implementation and the requirements for success. It is important to acknowledge the real and perceived impediments. By identifying these barriers at the outset and demanding methods to ameliorate or eliminate them, the Governor can ensure that these issues do not become roadblocks later in the process. It is also important that the state get agreement on the central issues before spending time and resources on operational barriers and regulatory procedures. Idaho officials stated that, from their perspective, organizational and procedural barriers are relatively unimportant "when compared with the barriers that arise from disagreements over the system's intended functions, the cost of providing systems, and the parties responsible for paying those costs."[30]

The Governor can also encourage state officials to look for opportunities to deploy ITS technologies concurrent with scheduled or needed upgrades of facilities and systems. For example, many of Oklahoma's ports of entries and weigh stations are twenty to twenty-five years old and need upgrading. State officials could use the funds appropriated for upgrades and expansions to begin the deployment of ITS technologies at those facilities. Besides making the most effective use of scarce resources, coordination with scheduled maintenance alleviates disruptions and inconveniences related to construction or reconstruction activities.

Many of the procurement issues associated with other state technology purchases arise during the discussion of ITS/CVO deployment.

States are concerned that the traditional one-time, low-bid model may not work. At the outset, states need to recognize that technology is constantly subject to expansion and upgrade. For this reason, the customary buyer/vendor relationship may not work. The Governor has the opportunity to use ITS/CVO implementation as a model to address procurement reform.

A major issue related to procurement is the inability of program officials who lack expertise in technology to clearly articulate the state's needs or to evaluate vendor proposals. In a self-evaluation, New Mexico officials found that "the state's experience with ITS has been marred by continual maintenance problems. . . . In terms of working with contractors, New Mexico got what the state asked for, but the state didn't know what to ask for or what was needed."[31]

In addressing concerns about interoperability and standards, the Governor may be most effective by stating what should not be done rather than what can be done. For example, the Governor may order that no purchases for data processing equipment or programming will be made without assurances that the purchases are compatible with the emerging CVISN architecture.

Maintaining Interest and Momentum

Full implementation of ITS/CVO services is a long-term endeavor and requires high-level visible leadership. State progress in implementation, however, is jeopardized each time there is a turnover in leadership in the Governor's office or among key cabinet officials. To help ensure continuity, an interagency or public/private board or commission can be created to oversee the development and deployment of ITS/CVO. By vesting leadership authority in several individuals, advocacy and program progress are less likely to be affected by the departure of one person.

This panel can serve several functions. It can advise the Governor and legislature concerning the state's interest in deployment of each ITS/CVO service. It can address institutional issues such as the adoption of technical standards or privacy protections. It can reconcile differences in the missions of agencies (e.g., enforcement versus promotion). Over time, it can assess the impact of ITS/CVO systems on state policy and program objectives and recommend changes, as appropriate.

Promoting Interstate Efforts

Economic markets do not recognize state borders. Clearly, the motor carrier industry benefits from the realization of a seamless national highway system brought about through the use of ITS/CVO technologies. To achieve this reality, interstate cooperation is needed in a number of areas, from the exchange of data to the adoption of technical standards. In addition, interstate collaboration can generate economies of scale, lessening the fiscal impact of ITS/CVO deployment.

Where ITS/CVO services are viewed as advancing state regulatory objectives, the Governor can promote cooperative efforts across state lines that would reduce the total cost of ITS/CVO deployment. For example, regional weigh stations or ports of entry could serve several states if information gathered at these regional facilities are readily available to enforcement officials in all the participating states.

Summary

The challenges to ITS/CVO implementation will vary among states. As is the case whenever new technology is introduced into the workplace, questions regarding the technical feasibility of the initiative are among the least daunting. It is the institutional, fiscal, and political roadblocks that require the majority of public policymaker's attention. This discussion of the barriers and opportunities related to ITS/CVO deployment was never intended to determine whether states should pursue this activity. Its purpose is to identify the questions and issues that need to be addressed as state officials ponder this decision.

This report raises more questions than it answers, but it also recommends a two-stage process for obtaining some of the answers. In

stage one, a state should conduct a rigorous cost/benefit analysis to determine the range of ITS/CVO services it might pursue. If the analysis demonstrates that it is in the state's interest to proceed, stage two requires that the Governor establish a process through which legitimate concerns about the impact of ITS/CVO services on the industry, the state, and the general population can be addressed. Additional guidance to states that elect to participate further in deploying ITS/CVO technology will be available upon completion of the NGA cost/benefit analysis report and a study of the lessons learned from the CVISN prototype and pilot states.

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Assessment of
Intelligent Transportation Systems/
Commercial Vehicle Operations (ITS/CVO) User Services-
Qualitative Benefit/Cost Analysis

Executive Summary

Introduction

Motor carriers currently compete in an environment of narrow operating margins and increasing service demands by customers, and do so with increased levels of safety. To realize efficiency, motor carriers have been aggressive innovators in applying advanced technologies. Motor carriers use technology to manage and optimize nearly every aspect of their operations and to transact business electronically.

The application of technology has redefined motor carrier operations and business relationships, and provides insights for government agencies to modify how they regulate the industry. The Intelligent Transportation Systems for Commercial Vehicle Operations (ITS/CVO) Program led by the Federal Highway Administration (FHWA) is envisioned to enhance safety and road operating efficiency through institutional reform and technology applications. Acceptance of government-sponsored technology programs will in part be driven by motor carriers' perceptions of the impacts on their businesses and how the programs will affect the current and future regulatory environment.

The final report--Assessment *of intelligent Transportation* Systems/Commercial *Vehicle Operations (ITS/CVO) User Services--Qualitative Benefit/Cost Analysis--is* the culmination of a two-year effort led by the ATA Foundation, Inc. (ATAF), with the National Private Truck Council (NPTC), and Dr. Tom Maze of the Iowa State University Center for Transportation Research and Education, to explore the impact of the ITS/CVO User Services program on regulatory compliance costs for motor carriers.

This effort was guided by the ITS/CVO Technical Working Group (TWG). The 36-member TWG is comprised of motor carriers from diverse segments of the industry, representatives from state agencies, and other interested parties. The TWG provided invaluable experience and insight to the research team through its review of all phases of this study. This effort represents a beginning in the process of identifying and defining the economic impacts of the ITS/CVO User Services to motor carriers. An assessment of the impacts on state regulatory agencies will be presented by the National Governors' Association in a forthcoming report.

This executive summary describes the current level of technology use by U.S. motor carriers and provides assessments of the six proposed technology-based FHWA ITS/CVO User Services. Issues surrounding implementation of the User Services are also presented. The final report thoroughly details the analysis.

The six proposed User Services have been assessed in two ways: calculating motor carrier benefit/cost ratios and estimating potential motor carrier participation. The assessments are based on the perceptions of 700 U.S. motor carriers responding to an ATAF survey concerning labor requirements for complying with regulations, and on their current use of technology. The assessments are limited by narrow assumptions, necessary to draw inferences about programs which do not currently exist and to advance understanding and facilitate discussion of the envisioned government application of technology.

This executive summary is divided into two parts. Part I of this report is designed to briefly present the study's analytical framework and the survey results from 700 motor carriers and 180 technology vendors. Part II includes a summary presentation of the benefit/cost assessments of each of the ITS/CVO User Services and recommendations for additional research.

PART I

Intelligent Transportation Systems (ITS) for Commercial Vehicle Operations (CVO)

The Intelligent Transportation Systems, authorized by the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) is based upon the application of technologies in such fields as data processing and communications to multimodal surface transportation needs. The ITS/CVO User Services are functional activities envisioned to improve the efficiency of state regulatory and enforcement agencies and improve highway operational efficiency and safety. It is also believed that motor carriers will benefit through improved safety, and operational and administrative efficiencies.

The ITS/CVO User Services were originally proposed in the FHWA National ITS Program Plan, May 1994. Since then, operational characteristics have been defined by the ATA Foundation's *Measuring Benefits and Costs* of *ITS/CVO User Services* and enhanced through programmatic development. The following defines the envisioned purposes of the ITS/CVO User Services:

Commercial Vehicle Administrative Processes--to automate regulatory functions and enhance data communications capabilities of state agencies to enable paperless transactions between motor carriers and agencies,

Electronic Clearance--to screen commercial vehicles for size/weight, safety, and credential compliance at mainline speeds,

Automated Roadside Safety Inspections--to improve screening and targeting of high-risk operators for inspection and to automate safety inspection activities in order to reduce inspection time and improve consistency. Two components are considered: (1) vehicle inspections and (2) hours-of-service reporting and verification.

On-Board Safety Monitoring--to provide warnings to driver of developing unsafe conditions and to provide real-time monitoring of driver performance, vehicle systems, and loads On-Board Safety Monitoring has two components: (1) collision avoidance and (2) monitoring of driver and vehicle performance. Only the second component is assessed within the framework of this study.

Hazardous Materials Incident Response--to provide responders to hazardous materials incidents rapid access to information concerning the shipment.

Freight Mobility--to provide real-time travel information to motor carriers in order to enhance routing and dispatching, and encourage intermodal information links.

Assessment Framework

The ITS/CVO User Services are assessed in two ways: (1) benefit/cost ratios and (2) estimating market potential. Development of these measures is summarized in the following section.

Benefits and Costs

Evaluating the benefits and costs of the ITS/CVO User Services to the motor carrier community requires comparing several evolving variables--motor carriers' regulatory compliance activities, available or developing technologies, and the likely components of the ITS/CVO User Services Program.

To understand the relationship among these disparate areas and activities, each has been broken down into its "functional activities." These areas of regulatory compliance are as simple as filling out a form, applying a sticker, stopping a vehicle, or filling out a driver log. This functional analysis allows for the comparison of the cost to motor carriers for technology products or services with the benefit as measured in reduced costs of compliance. The functional activity is the common denominator for this analysis.

The functional analysis of regulations and technologies represents the framework for evaluating:

1) what technologies can impact regulatory compliance activities;

2) what are the functional attributes and the prices of the technologies or services:

3) what are the functional attributes of the ITS/CVO User Services;

4) what are the compliance labor costs for the motor carriers; and,

5) what are the benefits are in terms of reduced costs of compliance.

The benefits are calculated by examining the labor costs of regulatory compliance for motor carriers using technology systems and those who do not. For example, costs for companies using EDI, on-board computers, and electronic logs are significantly lower for specific functions. The enabling technologies for the User Services are assumed to be the same as currently used motor carrier systems and the benefits (labor cost savings) are extrapolated to the envisioned functions of the User Services. With assumed costs, ratios are calculated.

This effort began with a systematic cataloging of the regulatory compliance processes for motor carriers and an extensive review of literature concerning motor carrier use of technology systems. The findings are encompassed in Technical Memorandum 1 --*A Framework to Measure the Benefits and Costs of IVHS/CVO User* Services--and were presented to FHWA and TWG in June 1994.

Measuring Benefits and Costs of Intelligent Transportation Systems (ITS)/Commercial Vehicle Operations (CVO) User *Services* advanced the study by detailing: (1) the functional attributes of commercially available technology products; (2) the envisioned operating characteristics of the six ITS/CVO User Services; and, (3) preliminary quantification of motor carrier costs of regulatory compliance based on in-depth interviews with 15 motor carriers. Comments provided by the FHWA and TWG in

October 1994 finalized the research methodology and provided guidance for large-scale data collection and analysis.

The ATAF sent questionnaires to approximately 7,000 motor carriers comprising the membership of the American Trucking Associations and NPTC and small carriers identified from the National Motor Carrier Directory (ten power units or less). Survey responses from 700 motor carriers (ten percent response rate), with 200 follow-up phone interviews, formed the basis for estimating the labor costs of regulatory compliance and how the use of technology systems may impact these costs. While the composition of the 7,000 motor carriers sent questionnaires and the respondent sample was heavily skewed towards larger motor carriers, extrapolation of survey results to the universe of motor carriers was allowed by segmenting the survey sample according to fleet size and developing compliance cost estimates for each of the segments.

The ATAF also identified and surveyed several hundred technology vendors. Product information was obtained from 180 vendors. An analysis of product functionality and pricing allowed development of simple price estimates for ITS/CVO enabling technologies that represents likely motor carrier costs of participation.

Estimating Market Potential

The size of the potential market for motor carrier participation in the User Services is expressed in terms of power units. Lower bound estimates were derived by extrapolating survey results by industry segment the number of power units operated by motor carriers in corresponding segments of the 7,000 motor carriers sent questionnaires. Upper bound estimates are based on extrapolation to the total number of medium and heavy commercial power units by segment registered in the United States as reported in the U.S Department of Commerce 1992 Census of Transportation--Truck Inventory and Use Survey (TIUS). To estimate market potential for Hazardous Materials (HazMat) Incident Response, the basis was adjusted to reflect the number of vehicles regularly hauling HazMat in quantities large enough to require a placard.

The factors used for extrapolation are:

Commercial Vehicle Administrative Processes--percent of sample power units operated by motor carriers that indicated (1) current Electronic Data Interchange (EDI) capability and (2) willingness to use EDI for regulatory administrative compliance transactions

Electronic Clearance--percent of sample power units operated by motor carriers indicating that roadside compliance checks reduced their fleets' operating efficiency.

Automated Safety Inspections--

Vehicle Inspections--expected to improve efficiency of inspectors and would impact all motor carriers subject to vehicle inspections.

Hours-of-Service Reporting and Verification--percent of sample power units operated by motor carriers currently using on-board computers or electronic logbooks.

On-Board Safety Monitoring--percent of sample power units operated by motor

carriers currently using on-board computers.

Hazardous Materials Incident Response--percent of sample power units operated by HazMat carriers indicating (1) current EDI capability and (2) willingness to use EDI for administrative compliance transactions.

Freight Mobility--this User Service will likely involve enhancing motor carrier routing and dispatching functions by providing real-time travel information. Therefore, market potential is based on the percent of sample power units operated by motor carriers who currently use computer-aided dispatch and routing systems.

Limitations of Assessments

Narrow assumptions have been made to allow discussion and enable policy development for programs currently being tested. In addition to specific analytical qualifications, the following assumptions and restrictions limit the assessments:

- The assessments are based on possible operating parameters for programs not currently in place.
- Each User Service is assessed independently and not within the framework of an integrated ITS/CVO program.
- Benefits are narrowly defined as reductions in labor costs of demonstrating regulatory compliance with no inclusion of impacts on operational efficiency or safety.
- Estimates of market potential are based on current technology applications and perceptions of operating efficiency by motor carriers and are presented in very broad ranges.
- No assumptions are made concerning motor carrier participation in the financing of ITS infrastructure (i.e., highway taxes or payment of transaction fees).
- Motor carrier costs of compliance and the potential benefits of technology are based on the current regulatory environment.
- Motor carrier perceptions of their costs and the impacts of outside factors on their operations (i.e., roadside compliance checks) are assumed reasonable.
- Where the User Services are not related to a current technology application or where regulations do not affect current motor carrier behavior, benefit/cost ratios are not calculated (i.e., the collision avoidance component of On-Board Safety Monitoring or Freight Mobility).

Motor Carrier Costs of Regulatory Compliance-Potential Benefits of ITS/CVO User Services

The two basic areas of motor carrier regulatory activities--compliance with administrative regulations (i.e., credentials, tax payments, etc.) and demonstrating compliance with safety regulations (including size/weight)--encompass both deskside

and roadside activities. For many different functional activities the labor costs of regulatory compliance are measurable.

Costs are calculated for a single power unit (tractor semitrailer or straight truck) and include only labor costs. The costs of regulatory compliance are expected to vary from one motor carrier to another depending on carrier range of operations, types of loads carried, industry segment, and, as fleet size increases, the resulting internal efficiencies derived from automation of functions and specialization of personnel. It is this last factor--size--which has an overwhelming impact on compliance costs as measured in terms of labor; this is seen in all of the regulatory activities except driver time related to preparing trip sheets and logs which are fairly constant across carrier size.

The costs of compliance activities estimated based on driver time (i.e., stops for compliance checks or filling out logs and trip reports) are assumed to apply only to motor carriers who pay drivers based on time worked. Within the framework of this analysis, motor carriers whose driver settlements are not time-based (i.e., drivers paid by miles driven or as a percent of revenue) are assumed not to incur these costs.

Figure ES1 summarizes the estimated labor costs of regulatory compliance by fleet size for the survey respondents and extrapolated to the industry using the relative proportions of medium and heavy commercial vehicles registered in the U.S. by fleet size.

Figure ES1
Average Annual Labor Costs of Regulatory Compliance Per Vehicle For All Carriers--Based on The Survey Response of 700 Motor Carriers

	Survey Respondents Small Fleets	Medium Fleets	Large Fleets	Weighted Industry* Average
Administrative Activities:				
Licenses, Registrations, Permitting	**$329**	**$132**	**$64**	**$197**
Mileage/Fuel Tax Reporting, Audits	**$579**	**$165**	**$72**	**$339**
Installing Credentials on Vehicles	**$ 10**	**$ 10**	**$ 9**	**$ 10**
Total	**$918**	**$307**	**$145**	**$546**
Demonstrating Safety Compliance--Deskside:				
Audit Logs, Summarize, Data Entry	**$587**	**$316**	**$159**	**$360**
Reviewing Driver Records, Qualifications	**$354**	**$197**	**$92**	**$216**
Annual Safety Inspection of Vehicle	**$ 22**	**$ 17**	**$ 14**	**$ 15**
Total	**$963**	**$530**	**$265**	**$591**
Demonstrating Safety Compliance--Roadside:				
On-Road Safety Monitoring	**$572**	**$183**	**$60**	NA(2)
Driver Time at Roadside Compliance Checks (1)	**$71**	**$81**	**$42**	NA(2)
Driver Time on Trip Sheets/Logs(1)	**$2,443**	**$2,577**	**$2,567**	NA(2)
Total	**$3,086**	**$2,841**	**$2,669**	NA(2)
Hazardous Material Incident Response:	**$270**	**$74**	$20	N/A(2)

Large Fleet = 100+ power units
Medium Fleet = 11 to 99 power units
Small Fleet = 1 to 10 power units

(1) Assumed only for motor carrlero whose driver settlements are time-based.

(2) **No industry average was calculated because survey responses only applied to those carriers whose driver settlements are time-based, or if the functional activity is limited to specific industry segments.**

***** **Weighted by the relative number of commercial vehicles in small, medium. and large interstate and intrastate fleets as reported in the U.S. Department of Commerce 1992 Truck Inventory and Use Survey.**

Level of Technology Application in Motor Carrier Operations

Motor carriers from all industry segments are applying technology to enhance their operational performance and fleet safety. The application of computer and communications technologies are based on a motor carrier's benefit/cost assessment for functional activities. For example, optimizing routing and dispatching would drive the purchase of mobile communications and mapping software; optimizing engine performance would drive the purchase of real-time performance measuring via a satellite system.

Figure ES2 details the current level of technology application among the motor carriers responding to the ATAF survey by fleet size and extrapolated to the industry using published estimates of the number of small, medium, and large fleets operating in the United States.

Figure ES2
Motor Carrier Use of Advanced Technology
Based on the Survey Response of 700 Motor Carriers

Technology Area	Percent of Motor Carriers Using Technology			
	Survey Respondents			Weighted Industry,
	Small Fleets	Medium Fleets	Large Fleets	Average
Communications:				
Mobile Communications	46%	42%	63%	46%
Electronic Data Interchange	8%	27%	65%	11%
Automatic Vehicle Location	1%	5%	23%	2%
Computers:				
Log Scanner/Auditing Systems	7%	35%	50%	10%
On-Board Computers/Hand-Held Computers	7%	27%	57%	10%
Electronic Logs	1%	5%	19%	2%
Software:				
Computer-Aided Dispatch/ Routing and Dispatching	15%	46%	74%	19%

Large Fleet = 100+ power units
Medium Fleet = 11 to 99 power units
Small Fleet = 1 to 10 power units

- **Weighted by number of small, medium, and large fleets operating in the United States**

Technology Products and Services
Potential Costs of ITS/CVO User Services

The potential costs to motor carriers for participating in the ITS/CVO User Services includes two areas: (1) financing of government ITS/CVO infrastructure from road use and other taxes and (2) cost of specific technology required to participate in a functional activity. While the funding of ITS/CVO infrastructure is of great concern to motor carriers, the focus of this analysis is restricted to only the motor carrier purchases.

The expected purchase price is based on an assessment of existing technologies in the marketplace with respect to the anticipated technological requirements of the User Services. The vendors in the technology marketplace produce a wide variety of products--hardware, software, and services--in an effort to enhance communications and computing capacities. These have been reviewed and are detailed in Figure ES3.

Figure ES3
Technology Products and Services
Distribution of 180 Surveyed Vendors by Technology Group

Technology	Number of Vendors
Communications	
Mobile Communications	17
Automatic Vehicle Location	15
Electronic Data interchange	15
Automatic Equipment/Vehicle Identification	6
Computers	
On-Board Computers	7
Hand-Held Computers	12
Hours of Service Related Products	4
Software	
Vehicle Maintenance Software	8
Routing and Dispatching	14
Mapping Software	13
Other Software Providers	36
Other Technologies	
Vehicle Diagnostics	6
Service Providers	16
Weigh-in-Motion/Automatic Vehicle Classification/On-Board Scales/ Traffic Management	11
Total	180

Pricing and Enabling Technologies for the ITS/CVO User Services

Since the majority of functional activities of the ITS/CVO User Services are not currently operational, the challenge of estimating costs lies in determining appropriate assumptions related to enabling technology and pricing. The actual sale price for a technology product is determined by myriad factors--number of units purchased, add-on features to basic systems, the specific functional characteristics, etc. This analysis does not attempt to estimate these factors, but rather maintains a simple price estimate that represents a likely average price across industry segments and company size. The cost of the technology systems are assumed spread over three years to reflect conservative estimates of useful life for the systems. The pricing assumptions for the ITS/CVO User Services are presented in Figure ES4.

Figure ES4
Pricing and Enabling Technology Assumptions

ITS/CVO User Service	Pricing/Enabling Technology
Commercial Vehicle Administrative Processes	$500 per carrier per year-- Cost of PC-based EDI software ($1,500 per carrier capitalized over three years) and transaction fees.
Electronic Clearance	$11 per vehicle per year-- Cost of Type I, read-only transponder ($33 per transponder capitalized over three years).
Automated Roadside Safety Inspections	
Vehicle Inspection	None-- All costs borne by enforcement agencies.
Hours-of-Service Reporting and Verification	$465 per vehicle per year-- Cost of hand-held data terminal ($1,395 per unit capitalized over three years).
On-Board Safety Monitoring	$233-$633 per vehicle per year-- Range based on cost of on-board devices for vehicle systems/load monitoring (add-on devices to mobile communications systems--$695 per unit) and the cost of on-board computer systems ($1,900 per unit). All costs are capitalized over three years.
Hazardous Materials Incident Response	$500 per carrier per year-- Cost of PC-based EDI software ($1,500 per carrier capitalized over three years).
Freight Mobility	Undetermined for User Service application.

Part II

ITS/CVO User Services Benefit/Cost Assessments

The benefit/cost assessments of the ITS/CVO User Services are based on the impacts of current technology on motor carrier operations and are extrapolated to the proposed User Services not yet deployed. The User Services hold promise for improving the efficiency of regulatory and enforcement agencies, but the success of the program will depend on the voluntary participation by motor carriers. In choosing whether or not to participate in government applications of technology, motor carriers will carefully scrutinize the benefits, costs, and policy implications of the ITS/CVO User Services.

The following summarize the assessments:

Commercial Vehicle Administrative Processes (CVAP)

CVAP shows great promise for reducing motor carriers' administrative compliance costs. Reductions in administrative compliance labor costs--which include licensing, permitting, registration, fuel tax reporting, and the installation of operating credentials on vehicles--are expected to be in the range of nine to 18 percent. Motor carrier costs to participate are expected to be low.

Within the framework of this study, the greatest promise is for medium- and large-sized companies (primarily regional and national in range of operation). These companies are expected to realize reductions' in administrative compliance costs outweighing participation costs by at least four to one. For small carriers, benefits are assumed to be at least equal their cost of participating, as detailed in Figure ES5.

Motor carrier participation in this User Service can be expected to be broad. Willingness to conduct regulatory transactions electronically via EDI was expressed by 32, 61, and 79 percent of small, medium, and large carriers, respectively. Market potential is estimated to be in the range of 425,000 to 2.0 million power units ranging from 11 to 54 percent of the medium and heavy truck population.

Motor carrier benefits from Commercial Vehicle Administrative Processes will likely be maximized through state agency streamlining of regulatory compliance activities and establishing the interfaces to enable paperless transactions between motor carriers and agencies. Enhancements to CVO information systems will help improve agency efficiency, reduce government costs, and then aid motor carriers.

Figure ES5
Commercial Vehicle Administrative Processes Assessment
Motor Carrier Benefits, Costs, and Market Potential

Fleet Size:	Small 1-10 Units	Medium 11-99 Units	Large >99 Units
Benefits and Costs			
Average annual labor cost for administrative compliance functions per vehicle	$918.00	$306.00	$145.00
Average percent savings due to technology (EDI)	9%(1)	18%	15%
Benefits--Estimated annual savings in labor costs for administrative compliance functions per vehicle	$83.00(1)	$55.00	$22.00
Costs--Cost of PC-based EDI software ($1,500 per carrier), capitalized over three years and prorated over average respondent fleet size by segment	$83.00	$13.15	$1.11
Calculated benefit/cost ratios	1.0:1(1)	4.2:1	19.8:1
Market Potential			
Percent of vehicles operated by EDI-capable survey respondents	9%	34%	84%
Percent of vehicles operated by survey respondents willing to use EDI for regulatory transactions	36%	69%	85%
Market Potential (number of medium and heavy trucks)	2,000 to 762,000	32,000 to 649,000	391,000 to 606,000

(1) **Insufficient numbers of EDI-capable small carriers appear in the survey results to estimate the impact of technology on compliance costs. Given the results from medium and large fleets, small fleets are assumed to show benefit/cost ratios of at least 1.0:1.**

Electronic Clearance (EC)

The labor costs of roadside compliance checks to motor carriers were estimated based on survey respondent perceptions of the number and average duration, including waiting time of size/weight, safety, and credential inspections they underwent in 1994. For motor carriers whose driver settlements are time-based, average annual per vehicle cost of driver time at roadside compliance checks is estimated to be $71, $81, and $42 for small, medium, and large fleets, respectively. These stops are assumed to hold no cost for carriers whose driver settlements are not time-based.

The potential benefit of EC to motor carriers as measured within the framework of this analysis, is the reduced cost of driver time resulting from fewer stops for roadside compliance checks. This analysis assumes that EC will decrease the amount of time spent undergoing roadside compliance checks by 50 percent to 100 percent. This measure of benefit may be considered only directly applicable to motor carriers who pay their drivers based on time worked. For the carriers whose driver settlements are not time-based, this analysis concludes that no benefit in terms of reduced cost of driver time is derived from EC.

The calculated range of benefit/cost ratios for only motor carriers who pay their drivers based on time worked are: 3.3:1 to 6.5:1 for small carriers; 3.7:1 to 7.4:1 for medium sized carriers; and 1.9:1 to 3.8:1 for large carriers, as detailed in Figure ES6.

The proportion of power units operated by survey respondents who indicated that roadside compliance checks decrease their fleets' operating efficiency is 33, 40, and 47 percent for small, medium, and large carriers, respectively. Market potential is estimated to range from 265,000 to 1.4 million power units, representing from seven to 38 percent of the U.S. medium and heavy truck population. This is not restricted to carriers who pay drivers by time because the potential benefit extends to enhanced operational efficiency.

Several concerns about EC were voiced by members of the trucking industry; many are captured in the American Trucking Associations' December, 1994 comments to the FHWA on the intelligent *Transportation Systems (ITS) National Program P/an* and also have been presented by several motor carrier members of the TWG. These include:

- **Not all carriers will realize benefit in reducing the number of roadside checks.** Many motor carriers do not pay their drivers based on hours worked. These carriers therefore generally do not recognize driver time spent at roadside compliance checks as a business cost. In addition, 58 percent of the survey respondents perceived roadside compliance checks as either improving or having no effect on their fleets' operating efficiency.

- **EC is premised on clearing trucks past a fixed point.** Automating fixed-site weigh stations and inspection facilities may not be the best way to capture noncompliant motor carriers and may not be compatible with emerging safety compliance strategies.

- **The scope of EC deployment and financing is undefined.** Concerns exist that funding the automation of fixed-site weigh stations and inspection facilities may not be the best use of highway funds. Additionally, some motor carriers view the payment of transaction or "clearance" fees as a method of augmenting state revenues at motor carrier expense.

Figure ES6
Electronic Clearance Assessment
Motor Carrier Benefits, Costs, and Market Potential

Fleet Size:	Small 1-10 Units	Medium 11-99 Units	Large >99 Units
Benefits and Costs			
Average hours per year per vehicle undergo g roadside compliance checks (1)	4.9	5.7	2.9
Average annual cost of driver time at roadside compliance checks per vehicle @$14.49/hr.	$0(2) $71(3)	$0(2) to $61(3)	$0(2) $42(3)
Assumed percent savings in driver time at roadside compliance checks per vehicle due to Electronic Clearance	50-100%	50-100%	50-100%
Benefits--Estimated annual savings per vehicle	$0(2) $36 to $71(3)	$0 (2) $41 to $81(3)	$0(2) $21 to $42(3)
Costs--Cost of Type 1, read-only transponder ($33 per transponder), capitalized over three years	$11	$11	$11
Calculated range of benefit/cost ratios	N o Benefi(2) 3.3: 1 to 6.5:1(3)	N o Benefit(2) 3.7:1 to 7.4:1 (3)	N o Benefit(2) 1.9::1 to 3.8:1 (3)
Market Potential			
Percent of vehicles operated by survey respondents who perceive that roadside compliance checks decrease fleet efficiency	33%	40%	74%
Market potential (number of medium and heavy trucks)	7,700 to 696,000	37,000 to 373,000	219,000 to 336,000

(1) **This estimate is not based on timed observations, but is based on motor carrier reported number and average duration of stops.**
(2) **Estimated for motor carriers whose driver settlements are not time-based.**
(3) **Estimated for motor carriers who pay drivers based on hours worked.**

Automated Roadside Safety Inspections (ARSI)

ARSI is evaluated for two components: (1) inspection of vehicles and (2) hours-of-service reporting and verification.

The primary purpose of this User Service is to increase the efficiency of enforcement personnel in conducting roadside inspections, thus allowing them to inspect a higher volume of vehicles. Market potential is not an appropriate measure for this component of ARSI because all motor carriers are subject to safety inspections.

Providing the means for drivers to present log data electronically to enforcement officials would also reduce the amount of time required to undergo a roadside safety inspection. In addition, the use of electronic logs or trip recorders reduce the amount of time a driver spends completing logs and trip reports by as much as 25 percent,

For only those firms paying drivers based on time, the benefit/cost ratios for automating driver hours-of-service recording and verification via on-board computers or electronic logs are estimated to range from 1.1 :1 to 1.6:1, depending on industry segment. For motor carriers whose driver settlements are not time-based, no benefit is assumed within the analytical framework of this assessment, as described in Figure ES7.

Based on the percent of power units operated by survey respondents who use on-board computers or electronic logs, the estimated market potential for this aspect of automating safety inspections is estimated to range from 80,000 to 886,000 power units; ranging from two to 24 percent of the medium and heavy truck population.

As with Electronic Clearance, driver time spent on regulatory compliance activities is not considered a cost for the motor carriers who do not pay drivers based on time worked. Therefore, the benefits as defined in reducing driver time undergoing roadside inspections or in completing logs are restricted to a narrow portion of the industry.

Figure ES7
Automated Roadside Safety Inspections--
Hours-of Service Recording and Verification Assessment
Motor Carrier Benefits, Costs, and Market Potential

Fleet Size:	Small 1-10 Units	Medium 11-99 Units	Large >99 Units
Benefits and Costs			
Average annual cost of driver time for roadside safety inspections per vehicle @14.49/hr.	$0(1) $30(2)	$0(1) $28(2)	$0(1) $11(3)
Average annual cost of driver time completing logbooks per vehicle @14.49/hr	$0(1) $2,443(2)	$0(1) $2,577(2)	$0(1) $2,567(2)
Average percent savings in driver time due to technology (electronic logbooks)	*25%*	*25%*	*25%*
Benefits--Estimated annual savings per vehicle	$0(1) $618(2)	$0(1) $651(2)	$0(1) $645(2)
Costs--Cost of technology (hand-held computer)	$465	$465	$465
Calculated benefit/cost Ratios	No Benefit(') 1.3: 1 (2)	No Benefii(1) 1.4:1(2)	No Benefit(1) 1.4: 1 (2)
Market Potential			
Percent of vehicles operated by survey respondents who use on-board computers or electronic logs	11%	29%	54%
Market potential (number of medium and heavy trucks)	2,600 to 229,000	27,000 to 273,000	50,200 to 383,000

(1) **Estimated for motor carriers whose driver settlements are not time-based.**
(2) **Estimated for motor carriers who pay drivers based on hours worked.**

On-Board Safety Monitoring (OBSM)

OBSM has two components: (1) collision avoidance and (2) on-road safety monitoring of drivers and vehicles. The framework of this study--evaluation of impacts of technology on the labor costs of motor carrier regulatory activities-- allows for the evaluation of only the second component. Collision avoidance is not assessed because: (1) the activity does not strictly involve regulatory compliance and (2) the exposure of collision avoidance technologies in the marketplace is limited and the impact on current activities cannot be assessed.

The monitoring of drivers and vehicles is assessed based on savings in labor for on-the-road direct observation of drivers and vehicles by using on-board computers or trip recorders instead. The monitoring of drivers and vehicles is only one of many functions performed by on-board computer systems or trip recorders. The benefit of reducing labor costs associated with on-road safety monitoring is small compared to the cost of on-board computers or trip recorders, resulting in calculated benefit/cost ratios ranging from less than 0.1:1 to 051, as described in Figure ES8.

Motor carriers will not likely purchase an on-board monitoring device solely to automate direct observation of drivers and vehicles, but would include this benefit with other operational benefits derived from its use. For example, other benefits could include increased equipment utilization, reduced fuel consumption, improved maintenance programs, etc. In other words, the decision to invest in such on-board sensing and recording devices will be based primarily on the motor carriers' assessment of operational and safety benefits.

Estimated market potential is not based on positive benefit/cost ratios as calculated within this narrow framework, but is based on those carriers who currently use on-board computers or trip recorders for monitoring driver/vehicle performance. Market potential is estimated to range from 202,000 to 866,000 power units, representing a range from five to 23 percent of the medium and heavy truck population. This estimate should be viewed carefully, as it may more realistically express the potential for on-board computers as a tool of fleet management than potential motor carrier participation in OBSM.

Motor carriers have expressed concern about monitoring or recording devices becoming mandatory equipment on their vehicles. As well, drivers have shown limited acceptance of on-board monitoring devices, citing the devices are an invasion of their privacy in their workplace.

Figure ES8
Automated Monitoring of Driver and Vehicle operations Assessment
Motor Carrier Benefits, Costs, and Market Potential

Fleet Size:	Small 1-10 Units	Medium 11-99 Units	Large >99 Units
Benefits and Costs			
Average annual labor cost for observing driver and vehicle performance on the road per vehicle	$572	$183	$60
Average percent savings due to technology (on-board sensing device-OBSD)	20%	20%	20%
Benefits--Estimated annual savings in labor costs for observing driver and vehicle performance on the road per vehicle	$114	$37	$12
Costs(1)--Likely cost of technology per vehicle	**$232** to **$633**	**$232** to **$633**	**$232** to **$633**
Calculated benefit/cost ratios	0.18:1 to 0.49:1	0.06:1 to 0.16:1	0.02:1 to 0.051
Market Potential			
Percent of vehicles operated by survey respondents using mobile communications systems which would support real-time OBSD	3%	11%	41%
Percent of vehicles operated by survey respondents who use on-board computers	10%	30%	52%
Market potential (number of medium and heavy trucks)	700 to 213,000	10,200 to 283,000	191,000 to 370,000

(1) **Range based on cost of on-board devices for vehicle systems/load monitoring (add-on devices to mobile communications systems4695 per unit) and the cost of on-board computer systems ($1.900 per unit). All costs are capitalized over three years.**

Hazardous Materials Incident Response (HMIR)

HMIR is assessed within the framework of reducing motor carriers' administrative costs for hazardous materials incident response programs through automation. Reduced remedial costs are not considered.

A method of providing first responders with information on load contents grew from the conclusions of a 1993 National Research Council (NRC) report on transportation and hazardous materials in which it was determined that a centralized system for tracking hazardous materials shipments would be too unwieldy and costly. The NRC recommended that industries transporting hazardous materials build on existing management systems developed by railroads and motor carriers.

The functional characteristics of this User Service are currently being defined through two operational tests. Hazardous Materials Incident Response is assessed assuming that motor carriers would post existing response information to a well-publicized site in an electronic network. Emergency responders could then rapidly access information about the company, cargo, response instructions, emergency response phone numbers, etc. These data are currently maintained by hazardous materials transporters.

A comparison of costs for motor carriers that use EDI and those that do not indicate nine to 18 percent lower costs for administrative compliance functions. Accordingly, it is assumed that the motor carrier costs of hazardous materials incident response programs would be reduced by a similar percent using these types oftechnologies. The estimated benefit/cost ratios range from 0.3:1 to 2.5:1, as detailed in Figure ES9. Within the framework of this assessment, this User Service holds promise for medium and large carriers. The cost of participating in this User Service outweighs the potential benefits for small carriers.

Market potential is estimated to range from 94,000 to 377,000 power units, representing approximately eight to *34* percent of trucks regularly transporting hazardous materials in quantities large enough to require a placard.

Though HMIR will enable improved motor carrier efficiency in administrating an incident response program, this User Service is designed to improve management of HazMat incidents to ensure the safety of the public and emergency responders.

Figure ES9
Hazardous Materials Incident Response Assessment
Motor Carrier Benefits, Costs, and Market Potential

Fleet Size:	Small 1-10 Units	Medium 11-99 Units	Large >99 Units
Benefits and Costs			
Average annual administrative labor cost for hazardous materials incident response per vehicle	$270.00	$74.00	$20.00
Average **percent** savings due to technology (EDI)	9%(1)	18%	15%
Benefits--Estimated annual savings in administrative labor costs for hazardous materials incident response per vehicle	$23.30(1)	$13.32	$3.00
Costs--Cost of PC-based EDI software $1,500 per carrier), capitalized over three years and prorated over average respondent fleet size by segment	$83.33	$12.50	$1.22
Calculated Benefit/Cost Ratios	0.3:1(1)	1 .1 :1	2.5:1
Market Potential			
Percent of vehicles operated by EDI-capable HazMat carriers responding to the survey	6%	39%	77%
Percent of vehicles operated by HazMat carrier respondents willing to use EDI for regulatory transactions	33%	75%	73%
Market potential (number of trucks)	None Assumed	19,000 to 212,000	75,000 to 165,000

(1) **Insufficient numbers of EDI-capable small carriers appear in the survey results to estimate the impact of technology on compliance costs. Given the resutts from medium and large fleets, small fleets are assumed to show benefit/cost ratios of at least 1 .O:1 .**

Freight Mobility (FM)

FM involves motor carrier use of **many technologies to improve fleet operating** efficiency and safety. The literature provides many examples of advanced computer and communications technologies improving carrier operational efficiency for vehicles, fleets, and business functions. The high ratio of benefits to costs are obvious from the rapid deployment of decision support systems, communications equipment, on-board computers, etc. These are borne out by the description of benefits provided by the motor carrier survey respondents.

The use of mobile communications can yield benefit/cost ratios ranging from 1.5:1 to 5.0:1 Computer-aided dispatch and routing systems also provide carriers benefits far outweighing costs.

The public sector role in Freight Mobility is still undefined, but will likely be based on enhancing operational efficiency and safety. Possible public sector applications may include real-time traffic information to aid routing and dispatch functions. Computer-aided routing and dispatch systems (CAD) are used by 15,46, and 74 percent of small, medium, and large carrier survey respondents, respectively. Based on these figures, it is estimated that the routing/dispatching of approximately 1.5 million medium and heavy commercial vehicles could potentially be affected through the use of real-time traffic information.

Recommendations for Additional Research

This study effort detailed benefit/cost assessments of the ITS/CVO User Services within the framework of their impacts on motor carrier labor costs of compliance with current regulations. The operational and safety impacts of the User Services were not quantified through this effort, nor were the impacts to motor carriers of changes in the regulatory environment examined.

The ITS/CVO User Services are evolving; the dozens of operational tests and program developments will ultimately determine their form. These all assume that there are safety and operational benefits to motor carriers, but these have not been systematically determined nor quantified. For example, the vendor literature suggests that one-half of all vehicle collisions could be avoided if the driver had even a one-half second warning of the impending collision and high frequency radar could provide this warning. But what is the context of benefits and costs in the motor carrier operation?

Anecdotal information is being used to drive many projects that will define the ITS/CVO program. Therefore, it is recommended that a systematic assessment be conducted to determine the safety and operational impacts from current and emerging ITS technologies for motor carriers to help guide the programs of the future and demonstrate the potential benefits to motor carriers.

From the perspective of motor carriers, regulatory efficiency is best realized through the elimination of regulation. Institutional issues analyses focus on improving existing regulatory structures and not on their reform. It is also recommended that institutional renovation be analyzed to accompany ITS/CVO deployment for motor carrier/government applications.

Great Lakes & Southeast States *Mainstreaming* Newsletter

Issue 1 | Alliance For Commercial Vehicle Operations | Winter 1996

Mainstreaming *action verb.* 1.to join with others ina main couse or direction for the ongoing development of an idea or a system

Welcome . . .

to ACVO, the Alliance for Commercial Vehicle Operations, a multi-state cooperative that is plan--ning to improve Commercial Vehicle Operations within the states and regions. ACVO was launched in the Fall of 1996 as an extension of the Federal Highway Administration (FHWA)'s "mainstreaming" program. Led by the Commonwealth of Kentucky, ACVO comprises two major regional trucksheds (Southeast and Great Lakes) and is further affiliated with the states of the Midwest. The Kentucky Transportation Center (KTC) will facilitate planning and information exchange of ACVO members in the Southeast and Great Lakes regions serving as the mainstreaming "champions".

Our aim is to improve the safety and efficiency of commercial vehicle operations (CVO) and allow for CVO to be accomplished electronically by the year 2005.

Through this first edition of the ACVO Newsletter we hope to provide useful information about ACVO and the mainstreaming program, as well as introduce you to key contact people who will be involved in establishing vital communication links between the states and regions.

Let's begin by examining the purpose of the program and identifying some of the key activities.

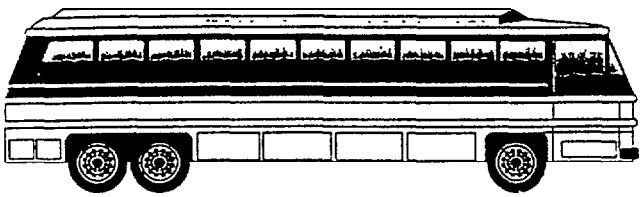
What is "Mainstreaming" ?

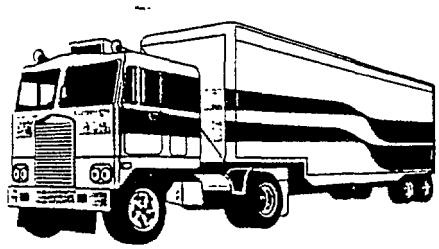
"Mainstreaming" is a term used by the Federal Highway Administration (FHWA) to designate a program for organizing and managing the deployment of Intelligent Transportation Systems (ITS) for Commercial Vehicle Operations (CVO). "Mainstreaming" includes streamlining the administration of motor carrier regulations, focusing safety enforcement activities on high-risk carriers, and reducing congestion costs for motor carriers. ITS/CVO services involve automating existing operations, networking. information systems, and changing the way that states and carriers do business.

The FHWA (Office of Motor Carriers) mainstreaming program objectives are to:

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

Note: Some of the above and the next page were taken from The ITS/CVO Mainstreaming Program, Summer 1996, U.S. Department of Transportation, Federal Highway Administration, Office of Motor Carriers, ITS/CVO Division.





Commercial vehicle operations include over-the-road freight hauling and passenger services.

What Activities Does Mainstreaming Include?

Mainstreaming includes the following types of activities:

- Support for state and regional working groups comprising representatives of key public and private sector CVO stakeholders.
- Development of state and regional CVO business plans that identify specific projects, milestones, funding sources, and responsibilities.
- Benefit/cost analyses and other technical studies that provide supporting information for deployment activities.
- Appointment of a CVO "champion" in each region to work with the regional and state working groups and encourage CVO deployment.
- Outreach to and education of state and industry participants that will increase the awareness of and support for ITS/CVO activities.

How Will Mainstreaming Activities Be Organized?

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

- The state level because it is the states that have the first-line responsibility for motor carrier regulations.
- The regional level, because many truck trips are interstate.
- The national level, because of the need to ensure uniformity of services for carriers operating in more than one region.

What Is The Role of the State Program?

The state program will emphasize planning for and deployment of specific ITS/CVO technologies and services, with a particular emphasis on the deployment of the Commercial Vehicle Information Systems and Networks (CVISN), a framework for electronic data interchange among agencies and carriers. This will be achieved through the following activities:

WORKING GROUPS: Each participating state will form a working group comprising representatives of the full range of agencies involved in CVO regulation and enforcement, as well as the motor carrier industry. The experience of operational tests and institutional issues studies demonstrates that these groups are effective at improving awareness and communication within the CVO community.

BUSINESS PLANS: The working groups will develop business plans with specific projects, milestones, and funding sources. These business plans will formalize the CVO planning processes, promote the development of public/private partnerships, and provide justification for ITS/CVO funding in state budgets. The business plans also will guide the integration of ITS/CVO technologies with existing state regulatory programs.

What Have I Signed On For?

By now, you may be asking this question! The Mainstreaming Program, and the multi-state ACVO alliance, is an ambitious venture designed to affect interstate commerce nationwide by 2005. By participating at the very beginning of its implementation, ACVO states will play a critical role in helping to define the standards and policies that will facilitate interstate commerce activities in the future. We see each ACVO member state being involved potentially in a five-step process designed to:

1. *Empower change compatible with the program mission and vision*
2. *Determine capabilities, strengths, and weaknesses*
3. *Identify opportunities and best practices for processes and enabling technology*
4. *Improve strategic/business planning and program budget decision making*
5. *Implement and deploy improved CVO practices*

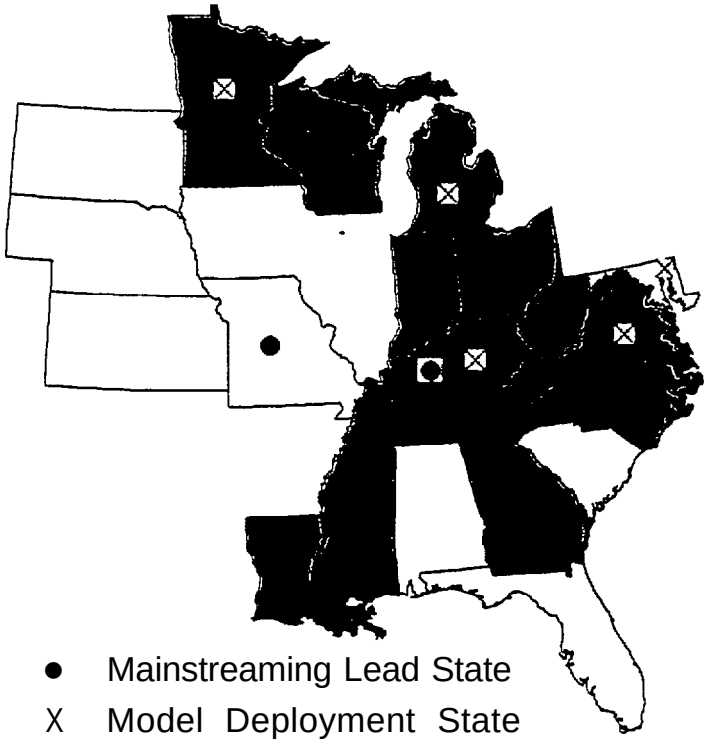
Lead State (Kentucky) Mission

The mission of the Kentucky Transportation Center, through the lead state of Kentucky, is to provide a package of services to ensure a highly successful regional mainstreaming program that benefits all the participating states and moves the region toward the Year 2005 goal.

Mainstreaming Conference

The first get together of the ACVO alliance is planned for December 4-5, 1996 at the Northern Kentucky-Cincinnati Airport Radisson. Conference participants will be welcomed by the home state representative and the Secretary of the Kentucky Transportation Cabinet. They will hear from representatives of the Federal Highway Administration, commercial carriers, the Johns Hopkins University Applied Physics Lab, ITS America and pilot/model mainstreaming states. In addition, small regional groups will discuss the national guiding principles for the mainstreaming program, and functional area teams will meet to discuss strategies for information collection and dissemination. Look for conference highlights in the next ACVO Newsletter.

ACVO Mainstreaming States



- ● Mainstreaming Lead State
- X Model Deployment State
- [] ACVO Members
- ACVO Affiliates

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AVCO Mainstreaming Consortium
Northern Kentucky-Cincinnati Airport Radisson
December 3-5,1996

Agenda

Tuesday, December 3

6:30-8:30	Hospitality Night (Cash Bar/Registration) Atrium Lounge, Radisson Hotel

Wednesday, December 4

7:30-8:30	"Good Morning America Breakfast"/Registration
8:30-8:45	Lead State Welcome: Ed Logsdon, Commissioner, KY Dept. Vehicle Regulation Sen. Kim Nelson, Chairman, Senate Transportation Committee State Rep. James Callahan; State Rep. Hubert Collins, Chairman, House Transportation Committee
8:45-8:50	Meeting Purpose: Calvin Grayson, Director, Kentucky Transportation Center
8:50-9:15	State Introductions: Commissioner Logsdon
9:15-9:30	FHWA/OMC Support: Glen Musial
9:30-9:45	CVISN Overview: Tim Herder/Johns Hopkins University/Applied Physics Lab
9:45-10:00	Break
10:00-10:45	Mainstreaming Overview: Commissioner Ed Logsdon, Bill Wilson, Midwest Mainstreaming, Don Hartman, Kentucky-Transportation Center
10:45-11:15	Carrier Perspective/Introductions: Buddy Yount, State Director OMC-FHWA, Jim York, Private Truck Council, David Black, Lexington Cartage; Nellie Jenkins, CGH Transport, Inc.; Herb Schmidt, Contract Freighting Inc.
11:15-11:30	Enforcement Perspectives: John "Jack" Van Steenburg, CVSA
11:30-12:30	Lunch
12:30-1:00	Introduction: Secretary Jim Codell. III ITS/CVO Opportunities: George l. Reagle, Associate Administrator of Motor Carriers for the Federal Highway Administration
1:00-1:45	Deployment States Panel Discussion: Jim Ramsey, KY: Nick Owens, MD; Marilyn Gaiovnik, MN; Eric Dhanak, MI; Ken Jennings, VA
1:45-2:00	Instructions for Breakout Sessions; Break
2:00-3:30	Breakout: Regional Focus Groups Benchmarks, Guiding Principles, and Capabilities
3:30-4:00	State Planning Guidelines and Regional Plan: Don Hartman
4:00	Wrap-up and Evening Instructions: Commissioner Logsdon
6:00	Evening Social/Discussion --

Thursday, December 5

7:30-8:30	"Good Morning America Breakfast"
8:30-9:00	State and Regional Issues: ACVO Staff Q&A on Planning Guidelines, Don Hartman
9:00-9:30	Technology for the 21 st Century: Hal Kassoff, Executive Vice-President and Chief Operating Officer for ITS America
9:30-10:45	Breakout: Functional Area Teams Discussion (Program Managers and team members); Administering Changing Technology (Policy Makers and Agency Administrators)
10:30-10:45	Break
10:45-11:30	Functional Area Teams Presentations
11:30-11:45	Wrap-up: Calvin Grayson

Alliance for Commercial Vehicle Operations (ACVO)
Mainstreaming Conference
Summary Report

December 4-5,1996

The ACVO Mainstreaming Conference was held on December 4-5, 1996 at the Northern Kentucky-Cincinnati Airport Radisson Hotel. There were approximately 100 people in attendance and 18 states were represented.

Led by the Common-wealth of Kentucky (The Kentucky Transportation Center is serving as the mainstreaming "champion."), ACVO comprises two regional trucksheds (Southeast and Great Lakes) and is further affiliated with the states of the Midwest. The following states are members of the ACVO:

Great Lakes	**Southeast States**
Indiana	Georgia
Michigan	Kentucky
Minnesota	Louisiana
Ohio	Mississippi
West Virginia	North Carolina
Wisconsin	Tennessee
	Virginia

Overall, the meeting was extremely organized, well attended, and very successful. The conference included several informative presentations, breakout sessions (see conference interim report on technology assessment survey, change motivators, and guiding principles ratings [dated December 5, -l996]), and networking opportunities between the states.

Some of the significant issues/information from the conference includes the following:

- Commissioner Ed Logsdon, Kentucky Department of Vehicle Regulation, led the conference and was very informative and supportive throughout the conference. Mr. Logsdon said he is requesting the ACVO Regional Plan be submitted early (by September 1997) to the Federal Highway Administration (FHWA). Mr. Logsdon said the plan will have "common threads" between the states. This issue was raised later on during the conference by the question: How will each state's ITS/CVO plan fit into the regional plan? Mr. Logsdon responded by saying we have not addressed this issue yet, but the regional and state plans will be consolidated somehow.

- Mr. George Reagle, Associate Administrator for the Office of Motor Carriers (OMC), discussed Intelligent Transportations Systems/Commercial Vehicle Operations (ITS/CVO) opportunities with an emphasis on safety. Mr. Reagle said a leader's most important job is communication, and he challenged the attendees toward that effort. Mr. Reagle also pointed out that we are all being asked to change and do more with fewer resources. In the case with OMC, we are changing from an

enforcement and revenue generation focus to safety. To explain this new focus, Mr. Reagle discussed his OMC triangle that includes the following three elements: partnerships, technology, and crash-free environment.

- Mr. Hal Kassoff, ITS America Executive vice-president and Chief Operating Officer, said widespread ITS deployment in the United States is inevitable because it will address our transportation problems. Mr. Kassoff challenged the attendees with the question - How will widespread ITS deployment occur? He then discussed the following three possible approaches/models: Directed (Federal legislation and funding), Grass Roots (market control), and Facilitated Framework (not centrally driven, but emerges as a pattern). Mr. Kassoff supports the Facilitated Framework approach because it is a combination of the Directed and Grass Roots models and is the most acceptable model. The Facilitated approach will allow for Federal leadership and direct involvement and support from local government and industry.

- Mr. Don Hartman, Kentucky Transportation Center, informed the attendees that the anticipated ACVO mainstreaming products include the following:

  - Participant directory
  - Draft marketing/outreach strategy plan
  - Status reports
  - Planning guidelines
  - Identification of future funding
  - Regional -ITS/CVO plan
  - A minimum of two regional conferences
  - Team meetings
  - Monthly report to members

- Mr. Herb Schmidt, Contract Freighting Inc., expressed his concern that technology might create a sterile environment for CVO. Specifically, he was concerned that CVO administrative automation will result in fewer personal contacts between regulatory personnel and the industry, and create an objective environment. Evidently, Mr. Schmidt's company has an excellent and personal relationship with the regulatory agencies, and he is concerned that technology might impede this rapport.

- Mr. Calvin Grayson, Director, Kentucky Transportation Center, provided the conference wrap-up. Concerning the next ITS/CVO steps for each state, Mr. Grayson said each state needs to inventory where they are at, where they want to be in five years, and identify potential funding. Mr. Grayson said there will probably be a mainstreaming conference for the Great Lakes Region and one for the Southeast Region in the Spring of 1997 and a consolidated conference in the Fall of 1997. An invitation was extended to all ACVO states to allow Kentucky representatives to meet with each state to strategize their ITS/CVO plans.

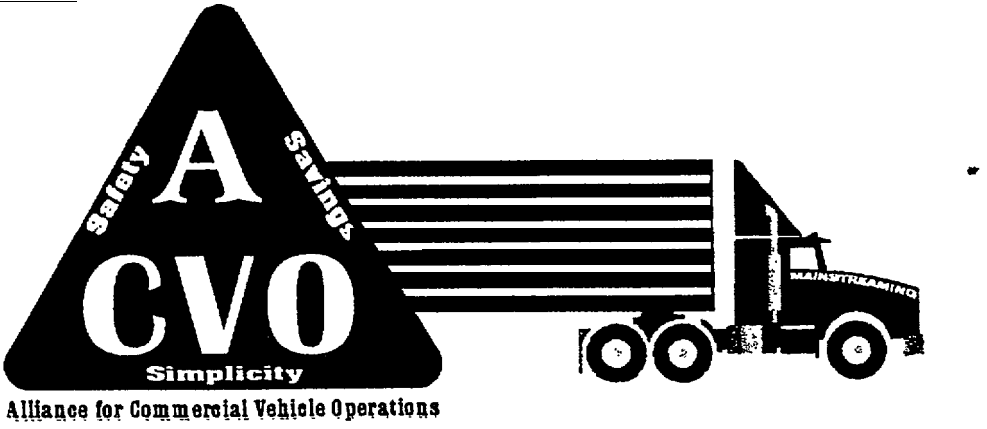
Interim Report

Mainstreaming Conference

Great Lakes and Southeast States

Contents

I. Preliminary Technology Assessment Survey
II. Change Motivators (Benchmarking)
III. Guiding Principles Ratings
IV. "Selected Comments" on the Guiding Principles
V. List of States Attending



Alliance for Commercial Vehicle Operations

December 5,1996

INTERIM REPORT

Mainstreaming
Great Lakes and Southeast States
December 5,1996

I. Preliminary Technology Assessment Survey

The survey was faxed on 11/14/96 to 75 state contacts. Information was collected from 13 states. The survey was in four parts, as follows:

1. Credentials and Permitting

Respondents were asked to mark all the interfaces for Inter-state operating authority, Intra-state operating authority, over-size/over-weight permits, Single state registration, and IFTA registration. Table 1 shows heavy reliance on in-person and by mail. With the exception of over-size/over-weight permits, which is represented by all interface categories. Of the remaining forms, cash and fax are more heavily used.

Table 1: Interfaces

Interstate Operating Authority

64% each-by mail and in-person
29% each-by fax and cash only
21% each-by phone / credit cards
0% by wire, on-line, escrow, EFT

Over-Size/Over-Weight Permits

66% each – by in-person, mail, fax
71% by wire
64% by phone
50% escrow

IFTA Registration

93% by in-person
86% by phone
43% by cash only
36% by fax
21% each-by phone, wire, credit card
0% by EFF, escrow, on-line

Single State Registration

86% each-in person and mail
43% by cash only
29% by credit card
21% by fax
7% by phone
0% each-by wire, on-line, escrow, EFT

2. Roadside Information Availability

As Table 2 indicates, there is a fairly even distribution of information provided by hard copy, by off-line database and on-line database in Driver Safety Data, Vehicle Inspection Data, and Carrier Safety Data. For State Vehicle Registration and CDLIS, information is slightly more heavily weighted toward use of on-line databases Because there was some confusion over the definition of on-line and off-line databases, the most important feature of these data is in the use of hard copy versus the use of databases.

Table 2: Information* Available *to Roadside

Driver Safety Data

- **40% -- by hard copy**
- **30% each -by off-line and on-line database**

Vehicle Inspection Data

- **37% each – by hard copy and off-line database**
- **27% -- by on-tine database**

Carrier Safety Data

- **45% by off-line database**
- **27% each – by hard copy and on-line database**

State Vehicle Registration

- **45% – by on-line database**
- **35% – by off-line database**
- **20% -- by hard copy**

CDLIS

- **55% -- by on-line database**
- **20% – by off-line database**
- **15% – by hard copy**

3. CV Enforcement/Weight Stations

The next survey question addressed the use of Interaction with MCMIS SAFETYNET, WIM, and Electronic Screening/Clearance. Of the respondents, 31% indicate use of Interaction with MCMIS; 39% with SAFETYNET. WIM is used by 92% of the respondents, with 69% reporting use of ramp sorting and 31% mainline. Of the 13 respondent states, 54% report the use of Electronic Screening/Clearance.

4. Clearinghouse Membership

Finally, respondents were asked whether they are now or plan to become a member of any clearinghouses. Of the three clearinghouses listed, 92% of the respondents indicate current or future membership in IFTA or IRP; 54% indicated the same for HAZMAT.

II. Change Motivators (Benchmarking)

Conference participants formed into groups by membership in a truckshed region. The first task for members of each regional breakout group (Great Lakes or Southeast) was to look at the environment for change in his or her own state. In some states there is a strong environment for change. This is not simply change for the sake of change: instead, it is change for the purpose of improvement. Each group was challenged to look at five "Change Motivators," factors whose presence or absence can influence the environment for change. If at least two of the factors are present, there is a greater chance for change to occur. The factors are:

1. Executive Mandate – Is there an executive or legislative mandate for change?
2. Severe Budget Restrictions – Are there severe budget restrictions for your state/agency?
3. Strong Customer Dissatisfaction – Is there strong customer dissatisfaction?
4. Benchmarking Results – Do the results of benchmarking with other states show significant differences?
5. An Overall Change Environment- is there an overall environment for change (desire to look at processes and enabling technologies).

Table 3: Perceived Presence of Change Motivators

CHANGE MOTIVATOR **FACTOR (Benchmarks)**	Definitely Present 1	2	3	4	Not Present 5
EXECUTIVE MANDATE					
Southeast	36%	21%	11%	7%	25%
Great Lakes	22%	11%	17%	22%	28%
Combined	30%	17%	13%	13%	26%
SEVERE BUDGET RESTRICTIONS					
Southeast	21%	18%	46%	14%	0%
Great Lakes	6%	28%	22%	33%	11%
Combined		22%	3 %	22%	4%
STRONG CUSTOMER DISSATISFACTION					
Southeast	15%	36%	43%	21%	0%
Great Lakes	0%	39%	33%	17%	11%
Combined	0%	37%	39%	20%	4%
Benchmarking Results					
Southeast	25%	35%	21%	18%	4%
Great Lakes	11%	33%	33%	6%	4%
Combined	20%	31%	26%	13%	7%
Overall Change Environment					
Southeast	25%	43%	21%	11%	0%
Great Lakes	44%	33%	11%	6%	6%
Combined	31%	39%	17%	4%	2%

III. Guiding Principles Ratings

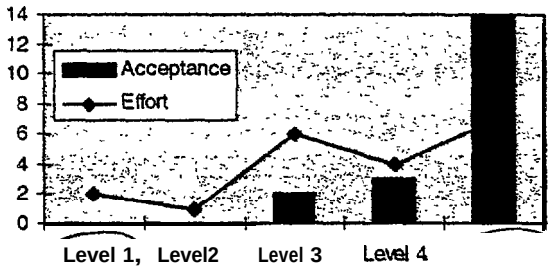
The principles are proposed as fundamental guidelines for CVO processes under Mainstreaming. Because they are important to the business plan, they require careful consideration by each state for its willingness and ability to support these principles. The Guiding Principles were developed under the auspices of the ITS America CVO Program Subcommittee. They continue to be reviewed by that Committee and will be updated as required to reflect the consensus of the CVO community.

Members of the regional breakout groups were asked to consider each Guiding Principle, then indicate the Level of Acceptance in his or her state, and the Level of Effort needed for major investments of time and/or resources.

Great Lakes

Guiding Principle 1

Use an approach balancing organizational changes and appropriate ITS/CVO technology to achieve efficiency and effectiveness for carriers, drivers, governments, and other CVO shareholders.

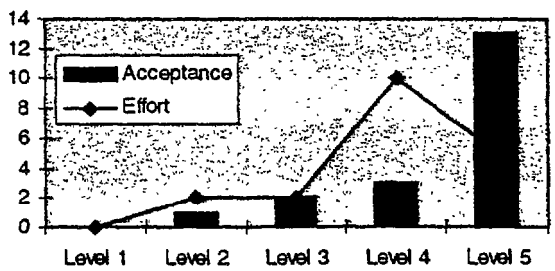


Not accepted

Stron accept

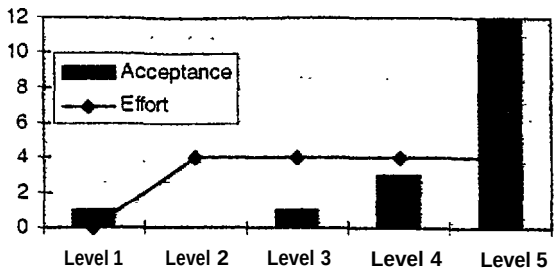
Guiding Principle 2

Streamline the CVO registration and tax process for carriers and government through information technology-improved practices and procedures.



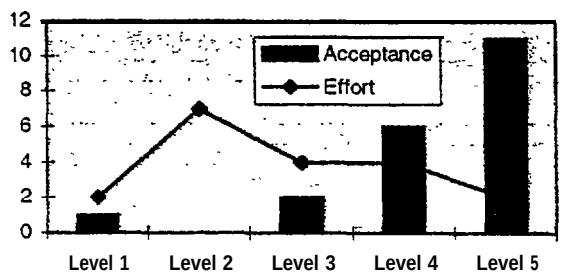
Guiding Principle 3

Focus roadside operations on eliminating unsafe and illegal operations by carriers, drivers, and vehicles without reducing the productivity and efficiency of safe and legal carriers and drivers.



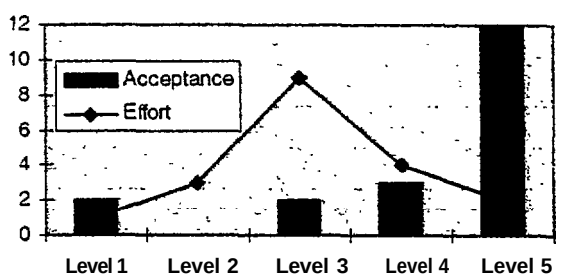
Guiding Principle 4

Evaluate new technology applications against regulatory choices that incorporate low- and no-technology options to ensure that applications are cost-effective for both government and industry.



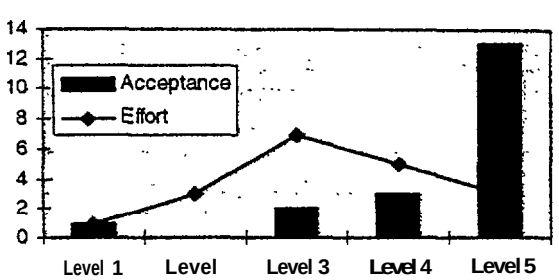
Guiding Principle 5

Use data exchange methods among systems that will ensure data integrity and prevent unauthorized access.



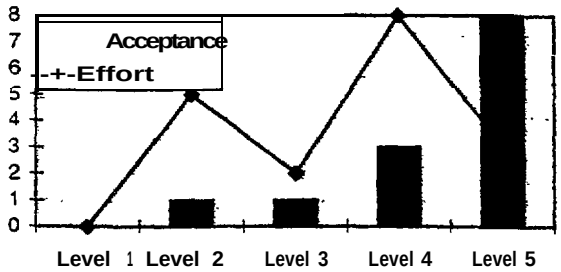
Guiding Principle 6

Adopt architecture that will accommodate proven technologies and legacy systems whenever possible.



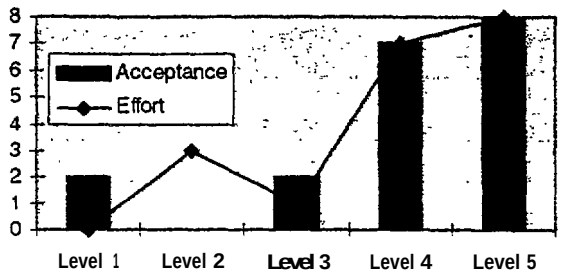
Guiding Principle 7

Incorporate key architectural elements into appropriate standards (state, national, international) after feasibility has been demonstrated.



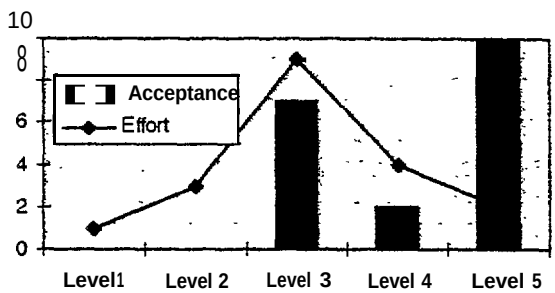
Guiding Principle 8

Support CVO roadside operations programs with timely, current, accurate, and verifiable electronic information, making it unnecessary for properly equipped vehicles to carry paper credentials.



Guiding Principle 9

Use a safety risk rating for all carriers based on best available information and common criteria.



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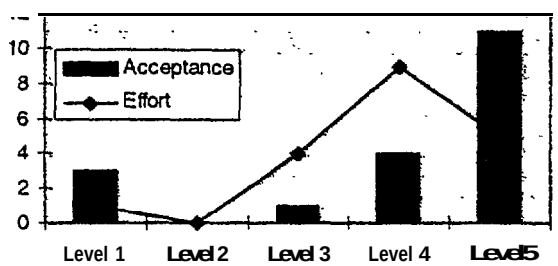

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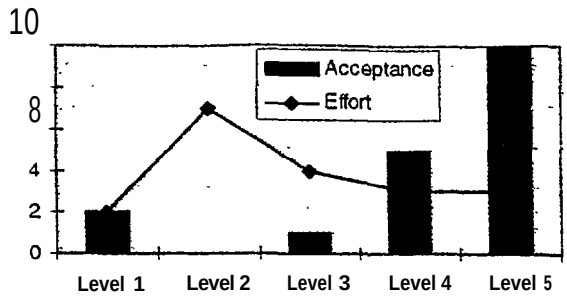

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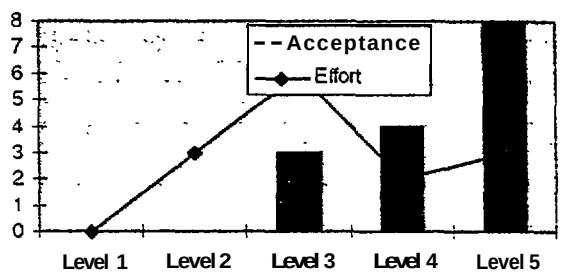

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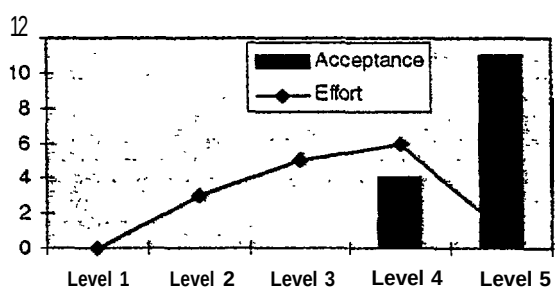

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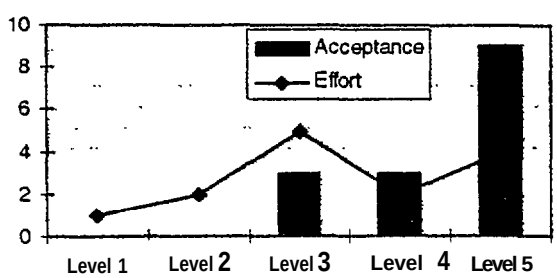

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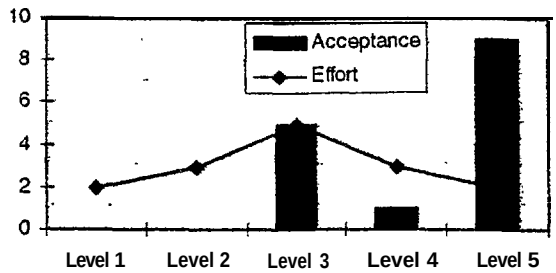

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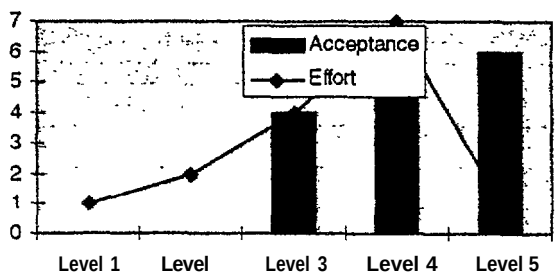

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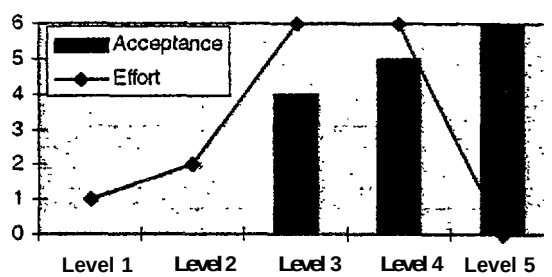

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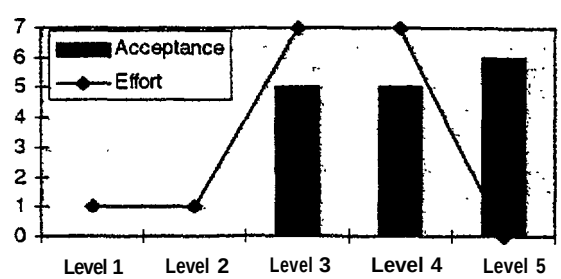

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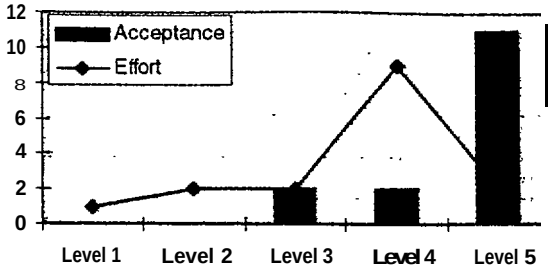

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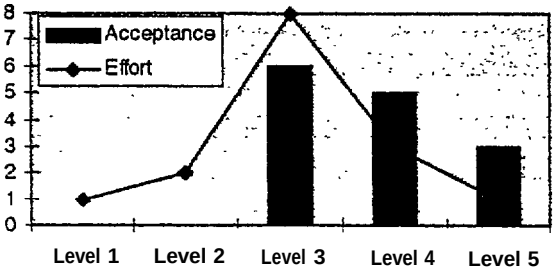

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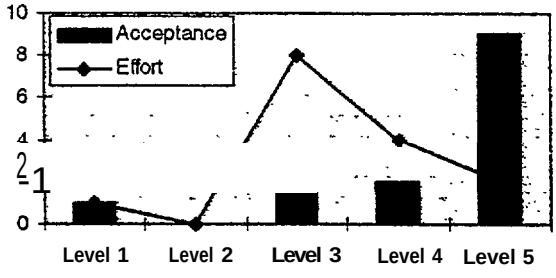

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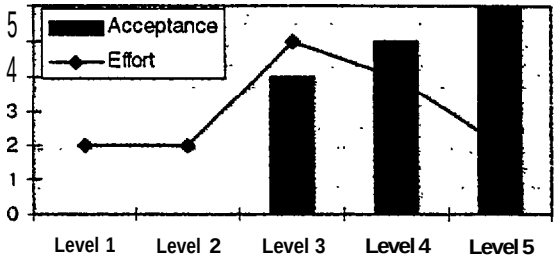

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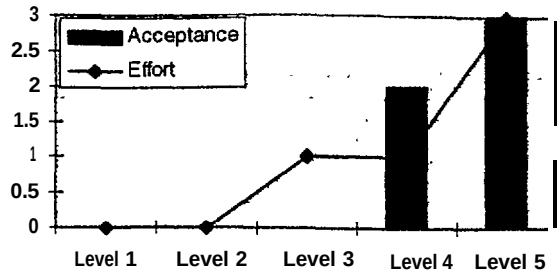

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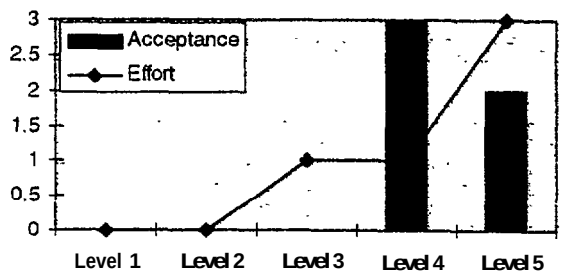

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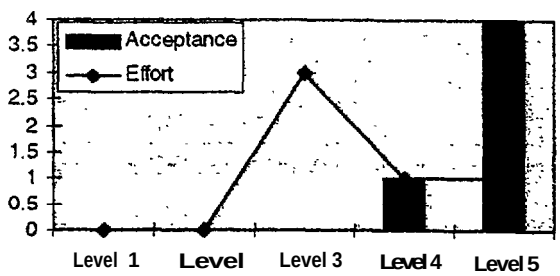

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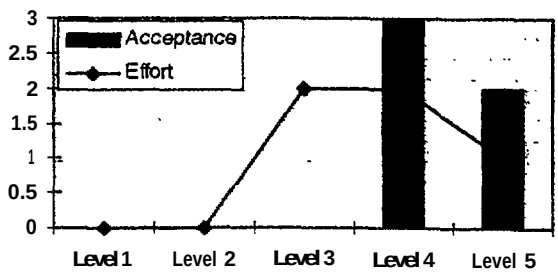

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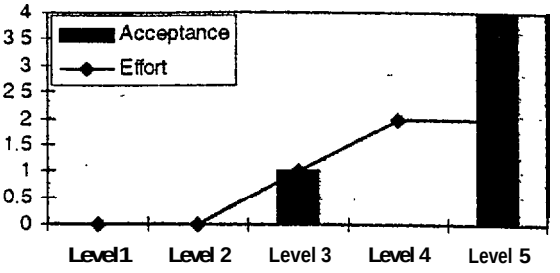

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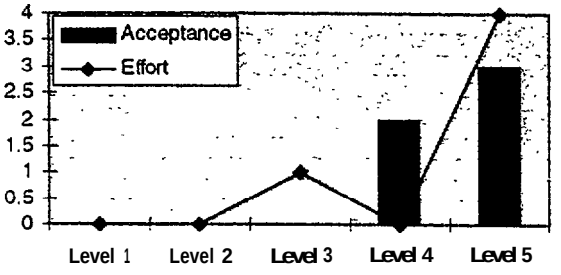

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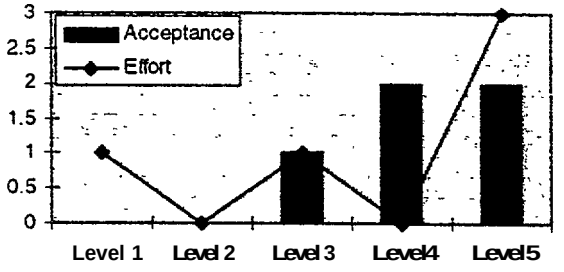

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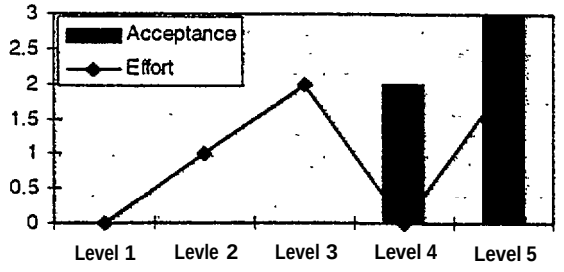

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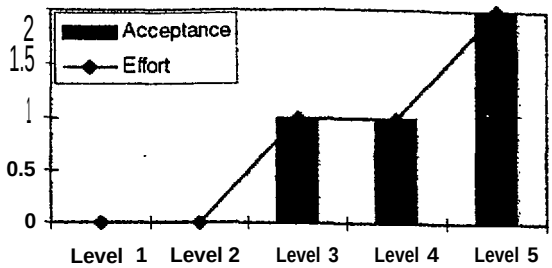

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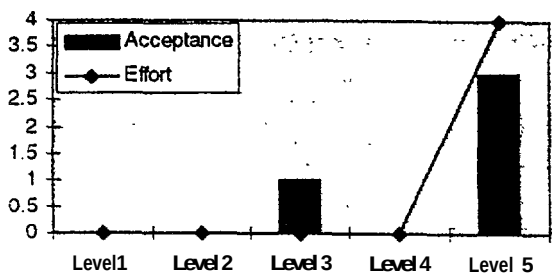

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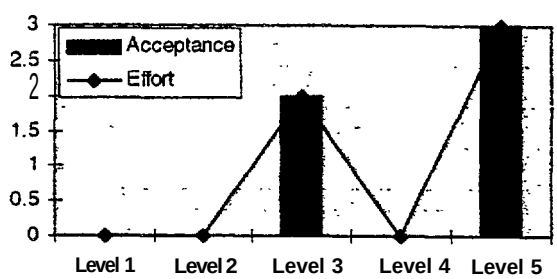


IV. "Selected Comments" on the Guiding Principles

Because ratings cannot always tell the story, we have included significant comments from attendees. They are not intended to indicate any particular "sense of the whole", but do indicate some of the thoughts and experiences of individuals and agencies grappling with improving CVO processes.

Great Lakes States

1. “critical that ‘process re-engineering’ be addressed first” / “some ‘turf differences are still impeding this process, although steady progress is being maintained” / “gaining buy-in to change is very difficult.. .an on-going process.. .requiring revisiting” / “FHWA talks the talk, but.. ." / “major renovation of several computer systems is planned”

2. “requires substantial investment in information systems development” / “already implemented the one stop shopping”

3. “we cannot lose focus on the enforcement officer/inspector interacting with the driver” / “already installed two license place readers” / “probable cause stops provide this environment currently”

4. “we are not looking at CVISN as a revenue source, state would pay as cost of doing business” / “looking at processes for improving, on a daily basis”

5. “this remains a critical concern for enforcement”

6. “interoperability of systems is the key”

8. “absolutely necessary”

9. "we need to get this up and running ASAP”

10. “this is the key...open standards”

11. “these events currently impact the carriers’ safety rating which impacts insurance rates”

Southeast States

1. “a ‘push‘ is needed to get the ball rolling” / “where is safety?” / “only one of the five agencies involved is committed”

2. “all agencies are aware of need for change, but we have barely begun”

3. “all enforcement agencies have bought into focusing on roadside enforcement” I “not sure this will be the easiest of tasks but believe it is the wave of the immediate future”

4. “some regulatory choices required as a trade-off”

6. “whatever works for you” / “if it ain’t broke don’t fix it”

9. “relative lack of data for numerous carriers” / “creating a standard (safety risk rating) will be difficult” / “performance based”

11. “we will still be conducting audits & inspections, with a better focus on at-risk carriers” /

V. List of States Attending

Great Lakes

Indiana
Michigan
Minnesota
Ohio
West Virginia
Wisconsin

Southeast States

Georgia
Kentucky
Louisiana
Mississippi
North Carolina
Tennessee
Virginia

Affiliates/Others

Florida
Maryland
Missouri
Oregon

Alliance for Commercial Vehicle Operations

DRAFT (for review purposes only)

A Guide for States

in the preparation of

A Business Plan

for the

Mainstreaming of CVISN

Kentucky Transportation Center and the Commonwealth of Kentucky

1996

Contents

Purpose of this Guide

Why are we planning?

How are we planning?

Getting Assistance

A State 'Mainstreaming" Planning Process

What's the Purpose of the Process?

Bringing the Best Together: Strategic Thinking, Business Analysis, and Program Budgeting

A Systematic Process (step-by-step)

Step One-- **Review Mission, Create Vision, and Establish Guiding Principles**

Step Two- **Analyze Capabilities, Strengths and Weaknesses**

Step Three-- **Determine Strategic Opportunities and Best Business Practices**

Step Four-- **Prepare Program Budget /Decision Package**

Step Five-- **Define Action Program (for ongoing management)**

Resources and Organization for Planning

Capabilities

Tools

Teamwork

Relating to Others for "Mainstreaming"(to be developed)

A Regional Mainstreaming Plan

A National ITS/CVO Plan

CVISN Architecture and Pilot/Model Deployments

Managing *"Mainstreaming" Initiatives(to be developed)*

Planning and Management

Milestones and Benchmarks

Progress Review

Appendix

References

Formats and Forms(to be completed)

Purpose of this Guide

The purpose of this guide is to be of help to state agencies/officials interested in improving the Commercial Vehicle Operations in their state. It is meant to assist those that are in some way, committed to change for the better. It may be simply changing the process *(eliminating a step or using a simplified form),* using some new-to-the-process 'low' technology *(faxing a form), or maybe* even applying some state-of-the-art technology *(a pen-based computer or automated vehicle identification equipment).*

Why are we planning? *Why???* to find the best ways to reduce the burden of regulation on the trucking industry, improve state regulatory efficiency, and enhance commercial vehicle safety. Planning includes deciding how important each of these benefits are in your state and how you go about realizing those benefits.

Oh, yes, and when your agency/state signed on for "Mainstreaming" you agreed to a pre-condition as follows--

Business Plans: A business plan will be required from each participating state (and regional consortium). The purpose of the plan is to identify the scope of the deployment activities, projected cost, implementation* schedule, *and anticipated accomplishments. With assistance from the regional champion, state mainstreaming funds, and input from the FHWA/OMC, each participating state should develop a state ITS/CVO business plan.

The goal of the states' ITS/CVO business plans is to institutionalize the process and projects, develop private partnerships, and provide justification for state budget requests for state ITS/CVO deployment funding. Also, it will be a framework or road map to integrate ITS/CVO technologies with existing state regulatory programs. If such a plan exists, then the state should focus Mainstreaming funds on activities to implement it. *(abstracted from FWHA/OMC documents)*

How are we planning? Very carefully--we are trying to reach good decisions about the deployment of process and technology changes in a timely manner. We don't want to get trapped in a planning process. In some states there is a strong environment for change--not for change's sake, but for improvement. You can measure the intensity of the change environment in your agency and state by considering the following questions:

1) Is there an executive or legislative mandate for change?
2) Are there severe budget restrictions for your state/agency?
3) Is there strong customer dissatisfaction?
4) Do the results of benchmarking with other states show significant differences?

5) Is there an overall environment for change (desire to look at processes and enabling technologies)?

If you answer 'yes' to two or more of these questions you have moved into an environment that is conducive to change. So you will not be wasting your time planning for change.

What are our planning aims? In our planning-

we qant to recognize opportunity and make good decisions about using scarce resources

we want to consider process and/or technology change that is useful

we want to plan for a period of 3-5 years in the future, in a short period of time(12 months)

we **want** to use a state/agency work group or team to assure relevance and responsibility

we **want** to have an action program (listing projects, resources, and milestones) at the end to serve as your management road map

You have the advantage... the pilot and model deployment states are wrapped up in testing and trying new process and technology ideas... you can assess their mistakes and successes so that you can deploy your choice of changes more efficiently. But some of your changes could be uniquely yours-they may work well in just your situation.

The planning process we recommend has five basic steps. We've looked at several approaches including the two slightly different ones offered by FHWA/OMC. We have tried to bring together, based on our experience, an overall approach that offers the best of strategic planning, business planning, and state budgeting. We know this approach works because we have tried each element in the real world. But it is not the only way to do it. You may want or need to modify it based on your situation or experience. Just do something!

We must each find our own way. The map, however, will be much the same for all of us, even if we choose to follow different paths. (C. Handy)

You should start with a mission, vision and/or mandate and guiding principles. You are looking for process and/or technology changes that will bring about improved commercial vehicle operations. Part of your vision should be based on the CVISN architecture. But your state's working group or team must craft a plan that is your state's plan--choosing those changes that make good

"business" sense for your situation. The following describes the process and its five basic steps and provides some how to information and examples.

Getting Assistance. The Commonwealth of Kentucky and the Kentucky Transportation Center can provide limited assistance to help get your planning started. After you get started you may want to have a consultant continue to assist you or facilitate your state's work group. But don't expect your consultant, if you choose to acquire one, to do your plan for you. And don't let your consultant do your plan & you. You must invest your human resources into this planning effort if it is to be useful to your state. The Kentucky Transportation Center will continue to provide you with information on process change and enabling technology. The Center will facilitate exchange among the mainstreaming states and the CVISN pilot and model deployment states.

A State "Mainstreaming" Planning Process

What's the Purpose of the Process? The process is a logical progression of choices leading to a specific change (probably best thought of as a project) that has to be budgeted and managed to completion if it is to make a difference. It is designed in sequential steps that build you to the intended product. You may have already done some of the bits and pieces or even whole steps. If so then simply review to insure that the previously completed work is still relevant and up-to-date before integrating it into the process.

Bringing the Best Together The process we are suggesting brings together the key features of strategic planning business planning, and state budgeting.

Strategic planning is what you do when you can not do everything, but must do something! It evolved from a military setting into the planning of private corporations. The business school of Harvard University popularized it and a form of it has found its way into the public sector. The expectation is that the approach will cause strategic thinking and the creation of a unique scheme for success. It first focuses on knowing your mission (what you do) and having a vision (what you want to become). Then it calls for you to analyze your strengths and weaknesses-to examine your capabilities. This gives you the ability to see the "strategic issues" affecting your improvement or success.

Business planning is expected to result in a 'venture' plan used to inform investors of the events that may impact the venture and the intended actions of the venture, showing projected revenues and costs. It may take the form of a loan proposal or an investment prospectus. Business planning calls us to think through the business we are in and the customers we serve. Thinking in this manner may be difficult for the public sector, but it can be instructive. Business planning leads you to carefully budget your resources in order to achieve the greatest benefit to you and your customers. It expects

that you will actively look for new improvement opportunities and always seek to apply the best available business practices.

State budgeting processes may incorporate aspects of several budgeting methods including 'zero-based budgeting'. Gone are the days of continual growth of all government agency budgets. Nearly every state goes through a process that calls for the preparation of a budget decision package. Such a budget decision package usually requires a program description (goal, objectives, and strategy), justification, and performance measures along with the financial (infrastructure and recurring) and human resource requirements. This material is subjected to central agency, executive, and legislative scrutiny. In the end your "business plan" should give you all the information you need for state budget preparation

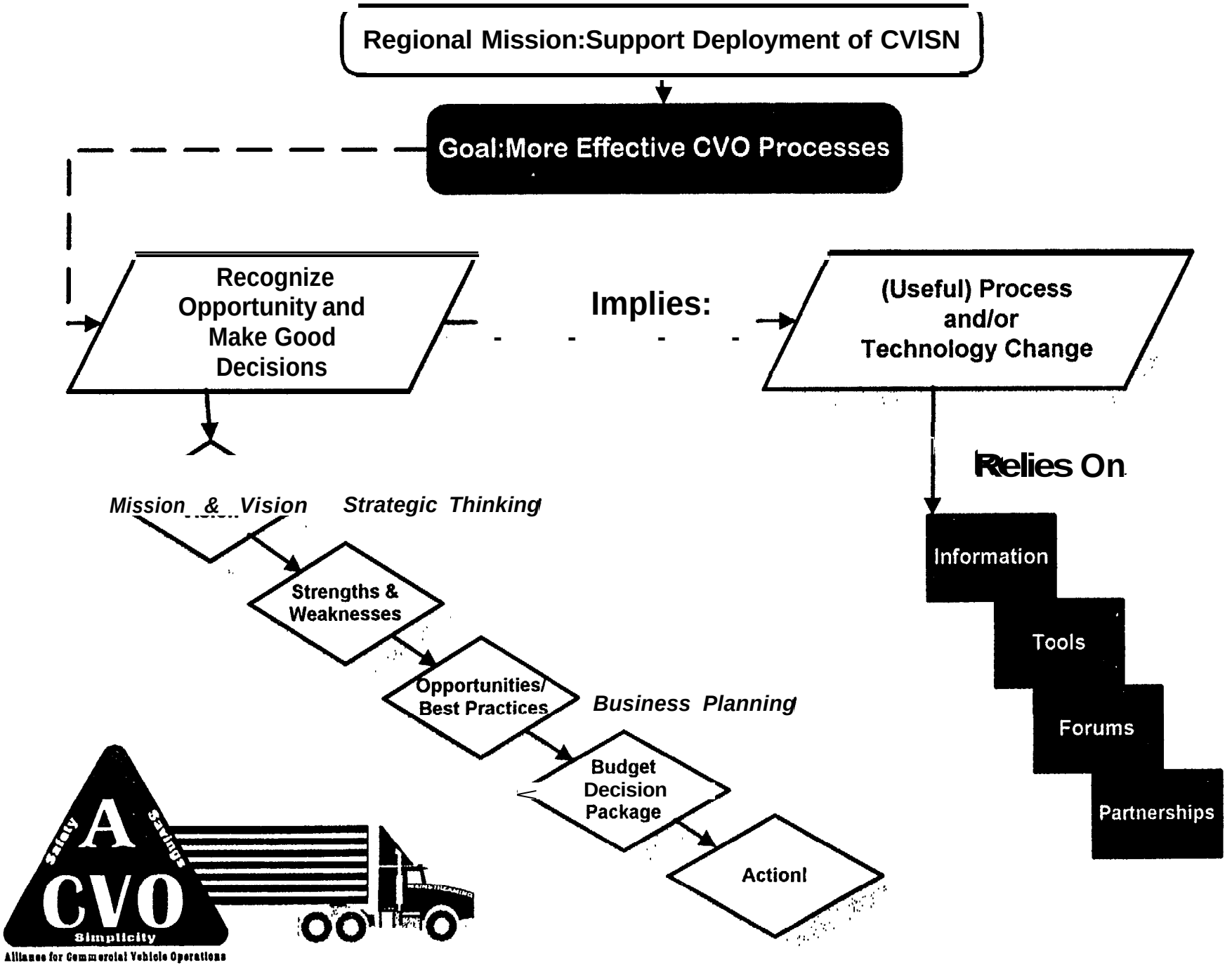
The following diagram shows the entire process and the next section briefly describes each of the five planning steps.

(diagram-see next page)

A Systematic Process Step-by-Step

Step On-Review Mission, Create Vision, and Establish Guiding Principles. In most cases you will already have an established mandate (from state laws) and a mission statement. Now is the time to dust them off and consider their meaning. How you state your mission within the law says everything about how you perceive the work of your agency and how you relate to 'customers'. It is important to create a vision of where your agency wants to be in the future. Mainstreaming expects that you will see a vision that has more effective CVO processes and that you will accept the guiding principles of the national CVISN architecture. Here you need to make the effort to examine, critique, and adjust. This is a critical first step. Do it and document it as a team. (We are prepared to assist you with this step-we have proven tools and team techniques available for you.)

Step Two-Analyze Capabilities, Strengths, and Weaknesses. An early step in strategic planning for a corporation usually involves a SWOT (strengths, weaknesses, opportunities, and threats) analysis. This is a close look at the internal and the external environment. Taking a hard look at your agency's strengths and weakness provides important information upon which to build improvement. It is the place to start-knowing where you are and what you've got. This is an assessment of your current situation. It needs to be straight forward and honest. This work can be done in a team setting, but should be facilitated. A team facilitator may be available to you from somewhere in state government or may be a


Regional Mission:Support Deployment of CVISN
Goal:More Effective CVO Processes
Recognize Opportunity and Make Good Decisions
Implies:
(Useful) Process and/or Technology Change
Relies On
Information
Tools
Forums
Partnerships
Mission & Vision
Strategic Thinking
Strengths & Weaknesses
Opportunities/ Best Practices
Business Planning
Budget Decision Package
Action!
Safety
Savings
A
CVO
Simplicity
Alliance for Commercial Vehicle Operations

service a planning consultant would provide. (We can advise you as to the team procedures to use for this step.)

Step Three-Determine Strategic Opportunities and Best Practices. This step will require both individual and team work. This is the heart of the planning process. Here we are trying to design or redesign processes. We're looking for ways to make things work better, or even eliminate some things. We are not trying to produce the best buggy whip. We are seeking to apply no-tech, low-tech, and high-tech solutions to real problems. Here we start to rely on information provided from others such as the CVISN Pilot and Model Deployment states and others who have tested and tried new ways of doing things. You may choose to specifically benchmark with some other state(s) as part of an on-going improvement process. You also need to look at the results of cost benefit or effectiveness analyses for those higher tech and more costly solutions as they affect both you and your customers. (We expect to keep the channels of communication open and assist you in getting all the available information.) A consultant could also help with this step.

Step Four-Prepare Program Budget/Decision Program Follow the-budget preparation guidelines as required by you state's budget agency. (You're on your own!) Use the materials you developed and acquired in the previous steps.

Step Five-Define Action Program (for deployment and ongoing management). This is the final step of 'planning' that is designed to set change in motion. It should provide the work program(s), detailing tasks, schedule, budget, responsibility, feedback and progress reporting procedures. Such a work program could also be the basis for a grant proposal! A preliminary version of this step should be done in concert with Step Four above. You should have the capability to complete this step or have a consultant assist you.

Resources and Organization for Planning

Planning requires time and some expertise which implies the need for funding. Each state's mainstreaming grant from the FHWA/OMC (along with the state's match) is an attempt to provide the necessary funding. However, you will need to assign or acquire the necessary staff. Someone experienced in planning and facilitation would be useful along with someone with information technology expertise. If these capabilities (or the commitment time) are not available within your agencies then you should consider hiring a consultant. A working group or team should be established to carry out this planning effort and involved those with responsibility for implementing the potential changes. These core persons should be drawn from the areas under consideration including-- credentialing, tax administration, permits,

inspection, and safety. The following diagram shows a model for organizing your work group.

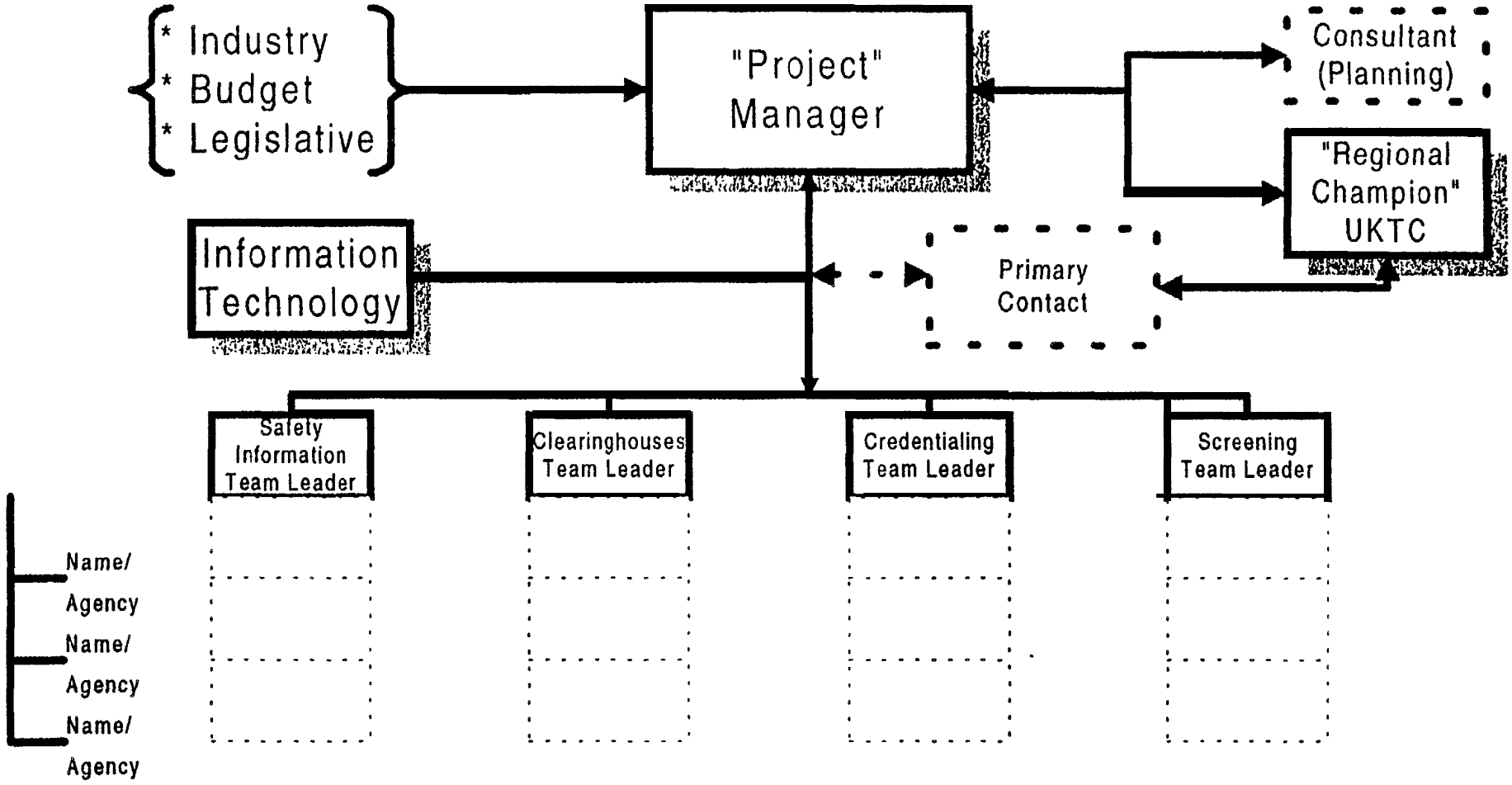
(CHA Rt---see next page)

How the group or team works is also important. You should carefully consider your team's work process. It is important to establish clear ground rules and milestones to gauge your progress. A set of team guidelines, for your consideration, is included in the Appendix. We have found them to be useful.

Relating to Others for Mainstreaming (to be developed)

Managing Mainstreaming Initiatives (to be developed)

ACVO Mainstreaming Organizational Options



Appendix

References

The Business Planning Guide, Bangs, Jr., David H., Upstart Publishing Co., 1995.

Creating and Implementing Your Strategic Plan: A Workbook for Public and Nonprofit Organizations, Bryson, John M. and Alston, Famum K., Jossey-Bass Publishers, 1996.

Budget Processes in the States, National Association of State Budget Officers, 1995.

A Guide to Developing a State ITS/CVO Business Plan (DRAFT), Federal Highway Administration, Office of Motor Carriers, 1996.

Information: 1996 ITS/CVO Funding for ITS/CVO Mainstreaming Activities, (from) Associate Administrator for Motor Carriers [HSA-20], Reagle, George L. (with Attachments l-4).

Team Guidelines, Kentucky Transportation Center, University of Kentucky, 1995. **[a complete copy is attached]**

Formats and Forms *(to be completed)*

Suggested Elements of State and Regional ITS/CVO Business Plans, Table 1 (from "Information: 1996 ITS/CVO Funding...")
[attached but not completely recommended]

Components of a Model State ITS/CVO Business Plan, Figure 3 (from A Guide to Developing a State ITS/CVO Business Plan...)
[attached but not completely recommended]

Table 1

Suggested Elements of State and Regional ITS/CVO Business Plans

	Safety-- target high risk	Electronic Clearance	Credentials	Freight Mobility/ Traffic Mgmt	Other CVO Activities
Projects/ Markets (What&Where)					
Policy Agreements (Why)					
Program Costs/ Benefits					
Org & Mgmt Approach (Who)					
Technical Approach (How)					
Funding Budget (How Much)					
Source of Funding (Who will pay)					
Schedule Defined (When)					

This is a guide or outline that lists the elements suggested for the state and regional ITS/CVO business plans. Each box represents an action item and should have a description and an accomplishment deadline. The milestones from each box would be used as the basis for assessing progress and future funding. The plans should cover at least three years. States and consortia are not required to pursue projects in every columned category.

Figure 3. Components of a Model State ITS/CVO Business Plan

1.0 Executive Summary

2.0 Introduction

3.0 Overview of the Business Planning Process

4.0 Description of the State

- 4.1 Current State CVO Program
- 4.2 Economic and Political Characteristics
- 4.3 Issues and Opportunities

5.0 Strategic Overview

- 5.1 Mission Statement
- 5.2 Guiding Principles
- 5.3 Goals and Objectives

6.0 Program Summary

- 6.1 Business Plan Structure
- 6.2 Description of Projects
- 6.3 Ranking of Projects

7.0 Organization and Management Approach

- 7.1 Stakeholders
- 7.2 Deployment Scheduling and Milestones
- 7.3 Costs, Funding, and Return on Investment

8.0 Contact Names

Appendixes (as necessary)

KENTUCKY TRANSPORTATION CENTER

TEAM GUIDELINES

1995

CONTENTS

Section One: About Teams

What is a Team
Team Basics
Team Growth Cycle

Section Two: Doing Teams

Team Rules
Team Charter
Team Responsibilities and Roles

Section *Three: Tools for Teams*

Problem Solving
Interpersonal
References and Check List

What's true *about sports is* also *true in business. Often a group presented as a team is nothing more than a collection of individuals who don't know the first thing about how to work together. That group hasn't been given the opportunity to become a team. It takes effort, conscious effort***,** *to become a team.*

Section One: About Teams

What is a Team, A team is a small number of people with complementary skills, who are committed to--

- common purpose
- performance goals, and
- approach

for which they hold themselves accountable. A small number usually means, for a work group, four (4) to seven (7) persons. Complementary skills and /or backgrounds may be necessary to adequately cover the purpose and/or reach the degree of synergism needed for high performance.

Team Basics There are at least six team basics-

1) ***small*** enough--no more than seven members!

2) ***adequate complementary*** skills--obviously teams need the right mix of technical skills, or the ability to access those skills, to address the task. Moreover, there are two important team member skills that will affect the viability of a team-- interpersonal and problem-solving (see Section Three).

3) ***truly meaningful*** purpose--does the team feel purpose is important?

4) ***specific*** goal&-topics, steps, deadlines.

5) ***clear working*** approach-committed to achieving consensus.

6) ***sense of mutual*** *accountability--members* hold themselves mutually accountable.

Team Growth Cycle, Teams usually evolve through several stages-

- Work Group--information sharing
- Pseudo-Team-not focused, not trying
- Potential Team-trying but, needs more clarity of purpose and discipline
- Real Team-clear purpose, goals and working approach, mutually accountable
- High-Performance Team--deeply committed to each other and team success

Section Two: Doing Teams

Team Rules, The following are general team rules for team meetings:

1. Understand the Task
2. Communicate with Each Other
3. Stay with the Agenda
   --talk one-at-a-time
   --add items to agenda, if needed, at beginning of meeting
   --keep a bucket list or issues bin for important items that are off agenda
4. Support the Team and Its Members
   -pull people into discussion
   -don't allow one to dominate
   --be honest with each other... and avoid personal agendas
5. Do Team Work as Assigned
6. Assess Meetings and Celebrate Team Successes

Some more specific rules for team meetings:

- Start on Time
- Have Key People There
- Make Sure You Understand Meeting Purpose
- Have an Agenda for Team Meetings-review it at beginning
- Stick to Team business
  --do group business with the group
  -do interpersonal business one-on-one outside group
- Use Flip Charts & Post-It Notes
  (one list for action, another list for bucket items)
  --provides group focus
  --preserves key ideas
  --establishes common information
- Check Meeting Progress While In Progress
- Agree on Follow-Up
- Summarize Meeting at End and Review/Evaluate
- End on Time

A check list to aid in preparing and conducting a meeting is provided in Section Three.

Team Charter, In the beginning, your team should have a charter (the what, why, who, and how). If you're given one, refine it-if you're not given one, make one and raise it up the flag pole. Don't be on a team without a charter!

Give your team a name, one that relates to its purpose.

Charters should be brief and answer these questions:

- **What** do we exist for? (Are we going to produce a product by a deadline?)
- **Why** is this important? (Does it relate to **UKTC** mission, values, and goals?)
- **Who** is on the team? (Are we missing someone's perspective/ expertise?)
- How are we going to operate?
  - --how are we going to analyze
  - --how are we going to reach consensus
  - --how are we going to measure progress and determine success

As part of your charter you should agree to some meeting etiquette such as--

1. one person talks at a time
2. be brief and to the point
3. make point calmly... take the high road... don't allow sexist, racist, or foul language to detract from your purpose
4. keep an open mind
5. listen without bias... well, at least try!
6. ask questions to help establish understanding
7. avoid side conversations
8. respect opinions of others
9. come to the meeting prepared
10. make it enjoyable

Team Responsibilities and Roles, Teams are responsible for taking/making a charter. Teams will report on activities and progress at staff meetings and/or brown-bag meetings. Teams should be prepared to market their ideas and accept group critique.

There are some special roles that need to be played in teams:

Team or *Meeting* Leaders (are accountable to the customers, including their team members)
> starts meetings with an agenda
> presents or calls for the presentation of agenda items
> ends meeting with a review

Team Recorder and Time Keeper
> responsible for the group memory using flip charts and notes
> responsible for team notebook (minutes and product record)
> helps group keep to allotted time

Team Gate *Keeper*
> reminds team of rules as necessary

Team Facilitator
> monitors process/roles
> keeps focus productive
> keeps interaction positive

At start-up your team should decide team roles-take volunteers or “nominate” someone (vote if you must). Maybe a role could be rotated among team members. The meeting leader and recorder roles are a must. In addition, a team notebook should be kept to include all minutes of meetings and various team products including your charter.

Section Three: Tools for Teams

Interpersonal. We work with people and it makes life easier and more productive if we learn some basic "people" skills. These skills are sometimes referred to as communication/management skills, but for our purpose they can be though about distinctly as-Listening, Supporting, and Differing.

Listening--takes effort... don't interrupt, pay attention, and don't judge!
Supporting--be friendly. . . don't try to control, create opportunity for others to speak, others may have useful ideas and information!
Differing--disagree without being disagreeable...

A long time ago the phrase "cooperative individualist" was coined to provide an image of a good team member. You would like thinking individualists to cooperatively seek the best solutions as a team.

Problem Solving, Good problem solvers usually have developed certain skills and use a step-by-step process involving those "rational" skills. A team is expected to solve problems by--

Deciding on a Rational Process(such as)
--Analyzing the Situation... how serious is this?
--Setting the Objectives... minimum outcomes expected?
-Developing Alternatives... possible actions?
--Examining the Consequences... possible obstacles/results?
--Deciding What is Best... which actions are most effective/efficient?
--Following-Up... are they working?

References and Check List

This guide was tailored to meet our team work needs (and we may need to refine this guide as we go along). We borrowed freely from several really good sources that you may want to consult further:

The Wisdom of Teams, J.R. Katzenbach and D.K. Smith, Harper Business, 1993.

Smart Moves, S. Deep and L. Sussman, Addison-Wesley, 1990.

Memory Jogger II F. Oddo (ed.), GOAUQPC, 1994.

CIP Facilitator, Belcan Engineering, 1994.

Desert Survival -- Leaders Guide, J.C. Lafferty, Human Synergistics, 1987.

Meetings Check List

Advance Meeting Preparation

What is your agenda (topics to be covered)?

What is your purpose--is it clear?

Have you indicated approximate time on topics?

What is the date/time/place?

Date_____ Time _____ Place _____
Is the room available/reserved?
Can the key people be there?

Do you have any preparation materials?

Are you sending them out in advance?
Are you having them ready for the meeting?

Pre-Meeting Readiness

- Is the room ready?
- Are your materials there?
- Are the visual aids working?
- Are you prepared to start on time?

The Meeting

- start on time
- preview the agenda with the team
- move through the agenda in sequence
- don't digress-stick to it
- don't allow anyone to monopolize conversation
- listen carefully
- seek clarification and elaboration
- provide interim summaries
- control conflict and hostility
- create an open and honest climate
- conclude by summarizing and agree on follow-up

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Radisson Inn-Airport
December 4, 1996

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1996

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ITS/CVO Strategic Communications & Outreach Plan

OCTOBER 1, 1996

Federal Highway Administration

Office of Motor Carriers

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BACKGROUND

Purpose, Goals, and Focus Areas of the ITS/CVO Program

Intelligent Transportation Systems (ITS) utilize information, communication, sensor and control technologies to improve mobility, safety and productivity. The Commercial Vehicle Operations (CVO) program, one of several components of the U.S. Department of Transportation's Intelligent Transportation Systems (ITS) initiative, is designed to accelerate the use of advanced transportation technologies to improve highway safety and increase productivity for the motor carrier industry.

In April 1996, the ITS/CVO Division of the Office of Motor Carriers (OMC) introduced a Five-Year Plan further defining its existing ITS/CVO program. The Plan reads:

The ITS/CVO Division's Plan for the next five years (1997 - 2002) focuses on the use of information and technologies that will allow commercial motor vehicles and drivers to be screened, identified, and checked electronically. This effort will increase motor vehicle safety on our highways by developing and using Electronic Data Interchange (EDI), along with cost-effective methods and technologies that will streamline State regulatory, enforcement and motor carrier practices.

During the next five years, the ITS/CVO division will focus on the development and deployment of technologies and information system components that will target high-risk carriers, vehicles and drivers.

The Five Year Plan lists specific program goals:

1. Improve commercial vehicle safety
2. Improve freight mobility
3. Improve credentials and tax administration
4. Ensure regulatory compliance and equitable treatment

The program consists of public and private organizations working together in three areas to achieve benefits for the American people by deploying technologies. These are:

1. Roadside Safety Systems
2. Administrative and Operational Systems
3. In-Vehicle Systems

The Five-Year Plan provides context for strategic communications planning. The Plan states that the ITS/CVO Division's research and technology program will focus on the following areas:

1. Information systems development
2. Technologies for safety inspection and weighing
3. Mainstreaming

Mainstreaming is a word coined by the U.S. Department of Transportation (U.S. DOT) that means moving ITS/CVO form research and development and testing to model then full deployment at state and regional levels. Mainstreaming requires coordinating efforts within states and regionally to ensure systems compatibility and to implement new strategies. Mainstreaming also encompasses marketing the program to target audiences. Mainstreaming requires having the proper organizations, business plans, outreach/training and financial commitments in place to deploy ITS/CVO core technologies and information systems.

The Five-Year Plan also states:
Model and full deployment will require a great deal of education to progress from the research and testing phase to one of deployment. Also, outreach efforts are needed to resolve issues and gain user acceptance. State agencies and carriers must work together to 1) facilitate and develop new tools, databases and procedures to support ITS/CVO; 2) automate burdensome paperwork processes; and 3) rely upon communication technologies to identify and screen vehicles and drivers at highway speeds.

The Plan that follows seeks to provide the communications context needed to fulfill the goals and objectives of the Five Year Plan of the ITS/CVO Division of the Office of Motor Carriers.

(For further information concerning ITS/CVO acronyms, readers may wish to refer to the *Glossary* of ***Acronyms,*** which was produced for the U.S. Federal Highway Administration by the John Hopkins University Applied Physics Laboratory in September 1996. This glossary can be accessed by visiting either of the following two Internet sites: www.cvo.netrans.net or www.jhuapl.edu/cvo)

Need for a Strategic Communications Plan

A successful ITS/CVO program cannot be mandated, willed, or simply funded into existence. ITS/CVO deployment requires voluntary buy-in by multiple audiences who reference one another. Success of the ITS/CVO program requires marketing, education, and cooperation. Markets need to be identified, maintained, and defended. Education is needed to inform key players about the program and to progress towards deployment. Finally, cooperation is essential to get state regulatory agencies and carriers working together. In order to better address the non-technical challenges to the program, the ITS/CVO Division commissioned Walcoff & Associates (Jonathan Slevin, Nels Ericson, Andrea Ferguson) to develop a Strategic Communications Plan.

Plan Objective

The ***objective*** of the communications and outreach program of the ITS/CVO division office is to build Federal Highway Administration (FHWA), state government, motor carrier industry, and driver support for the national ITS/CVO program while enhancing awareness among elected officials. The objective will be accomplished by informing and educating selected audiences of the impacts and benefits of ITS/CVO technology.

The Communications Plan offers a context within which to implement a program that informs and educates users, partners, stakeholders and the public about the benefits, services and products available in the ITS/CVO program.

Definition of "Marketing"

The term ***marketing,*** rather than ***outreach*** is used deliberately. A market is an audience, or a set of actual or potential customers for a given set of products or services, who have a common set of needs or wants, and who reference each other when making a buying decision. ***Marketing*** is taking actions to create, grow, maintain, or defend markets.

Using the term, ***marketing,*** emphasizes that the ITS/CVO program needs to be ***sold*** to market segments (audiences) just as products and services are sold.

Marketing professionals insist on market segmentation because they realize no meaningful marketing program can be implemented across a set of customers who do not reference each other.

The vague term, ***outreach,*** obscures the fact that successful program implementation requires that communications and marketing methodologies be applied.

Plan Development, Evolution, and Delivery

The ITS/CVO Division office committed to an assertive outreach program at the time it was established in 1994. The development of a Strategic Communications Plan was commissioned in September 1995 and has been developed through a seven-phase process:

Phase One:	Review existing communications and outreach materials.
Phase Two:	Collect existing reports and studies.
Phase Three:	Review existing and planned programs and outreach activities.
Phase Four:	Obtain direct exposure to issues and audiences.
Phase Five:	Conduct executive interviews with ITS/CVO leaders.
Phase Six:	Develop and deliver several drafts of the Plan.
Phase Seven:	Deliver final draft Plan on August 1, 1996, incorporate final comments, and distribute.

SITUATION ANALYSIS

The commercial vehicle industry affects all Americans. However, not all travelers participate in the commercial movement of goods as they do in moving ***themselves*** from one place to another. General public awareness of ITS/CVO is therefore less important to the attainment of ITS/CVO objectives than it is with Advanced Traffic Management Systems (ATMS) and Advanced Traveler Information Systems (ATIS). Targeted awareness to audiences that influence decision makers such as state legislators, local elected officials and the motor carrier industry is very important.

Motor carriers have been investing in ITS technologies whenever it helped improve their bottom line. In ITS/CVO-unlike most areas of the federally funded ITS initiative-industry adoption of technology has in many cases preceded the government's emphasis on the application of intelligent transportation systems solutions to commercial vehicle operations.

Results and evaluations of numerous FHWA-funded ITS/CVO operational tests and demonstration projects will increasingly surface during 1997 and 1998.

In advancing the ITS/CVO program, the following twelve market dynamics need to be considered:

1. Administrative Structure
2. Budget
3. Staff Resources
4. Key Projects
5. Industry Assessment
6. State Agency and Legislative Assessment
7. U.S. Congress Assessment
8. Media Assessment
9. Public Awareness
10. Marketing Channels In Use
11. OMC's Expanding Role and Identity
12. Marketing Program

These dynamics are further discussed in the next few pages.

ITS/CVO Administrative Structure

The ITS/CVO Division of the Office of Motor Carriers, FHWA, has responsibility for program oversight in coordination with the Joint Program Office for ITS (JPO) of the U.S. Department of Transportation, and the Turner Fairbank Research Center of FHWA. This form of administrative structure results in shared responsibility of the ITS/CVO program.

ITS/CVO Program Budget

Funding for the ITS/CVO program comes from three sources: ITS, OMC, and Government Operating Expenses (GOE). Projected funding figures for the ITSKVO Program are as follows:

- 1995-$30,461,000
- 1996-$34,217,000
- 1997-$39,950,000
- 1998-$51,418,000

OMC Staff Resources

The OMC has a staff of approximately 440 people including 100 people at the headquarters in Washington, D.C., 90 in the regional offices, and 250 in the state offices. The ITS/CVO Division office has a staff of nine people at headquarters, including one person serving as the ITS/CVO outreach coordinator. One OMC staff person in each of the nine regions is the central point for ITS/CVO, and only one of these is dedicated full-time to the task. Each of the 50 state offices has an average of five staff people and their focus on ITS/CVO program issues varies. The JPO has a staff of 22 people, all in Washington, D.C., of whom one person serves as the ITS/CVO coordinator.

Key Projects

Federally-funded ITS/CVO projects are many and varied, including pilot programs, research projects, demonstration projects, and operational tests. Projects include: Advantage I-75, brake testing research, Commercial Driver's License Information System (CDLIS), Commercial Vehicle Information and Systems and Networks (CVISN), driver fitness for duty verification, electronic registration, electronic clearance systems, Green Light, international border clearance, International Registration Plan/Interstate Fuel Tax Agreement clearinghouses (IRP/IFTA), Motor Carriers Safety Assistance Program (100/200 MCSAP site projects with portable computers at roadside), Operation RESPOND (Hazardous Materials Response System), out-of-service verification, Port-of-Entry Advanced Sorting System (PASS), Safety and Fitness Electronic Records System (SAFER), Smart Card, and weigh-in-motion research. Also, TruckDesk (I-95 Coalition project), HELP, Inc.'s PrePass program, and Advantage CVO are potential ITS/CVO projects unsupported by federal funding through FHWA that will be useful to communicate to target audiences.

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Industry Assessment

1. Motor carriers invest in technology when they are convinced that a specific technology will enhance safety for drivers, increase productivity, and thereby improve their bottom line. Industry peers strongly influence company purchasing decisions.

Furthermore, successful technology insertion by a motor carrier occurs in concert with drivers. Brad Popoff, Senior Vice President of Marketing, HighwayMaster, emphasizes that driver satisfaction determines the extent to which adoption of a technology will work:

Technology has to do something that your main asset-the driver-is going to embrace. True driver satisfaction is necessary for technology applications to succeed.

2. Vehicle/Roadside Communications (VRC) standards and Dedicated Short Range Communications standards (DSRC) are a vital need.

3. There is an impression within the trucking industry that ITS/CVO is vendor-driven, and that ITS/CVO is an example of solutions looking for a problem.

State Agency and Legislative Assessment

1. State legislators tend to be unaware of ITS/CVO projects. Due to its funding, the MCSAP program is the best known OMC effort that employs an ITS/CVO technology (roadside portable computers). There are effective program advocates in state agencies in key states.

2. Early adopters and followers in state agencies are frustrated because of the absence of vehicle to roadside communications standards.

U.S. Congress Assessment

U.S. Congress funding history and reports (Congressional Budget Office 1l/95; Senate Appropriations Committee 7/l8/96) give evidence to a pocket of support for the ITS/CVO program. Beginning in fiscal year 1997, the program's progress offers opportunities to broaden the base of awareness and support among Members of Congress and staff.

The program to date has lacked significant and sustained industry advocacy on Capitol Hill because early efforts have involved research and intergovernmental relations. Senior industry officials equate ITS/CVO with government regulation and the possibility of increased taxes, and therefore have not fully supported the program thus far.

ITS/CVO benefits are more easily communicated than traffic management benefits. Congress has cited positive cost/benefit examples deriving from the ITS/CVO program.

Media Assessment

The importance of media relations to the ITS/CVO communications and outreach program cannot be over-emphasized. Media relations are more effective when coordinated among associations, companies, and governments. For this to occur, the ITS/CVO Division of the OMC needs to play a leading role.

A database of media and an Internet site that supports a media relations campaign have been developed and are updated on an on-going basis.

A look at trade press coverage shows that the ***ITS/CVO Update*** newsletter serves as the sole publication dedicated to ITS/CVO topics. Since March 1996, the program and its projects have received excellent coverage in ***Transport Topics*** and ***ITS World.*** Trade press advertisements do not connect technology to ITS.

There is little, if any, ITS/CVO coverage by local media. It is premature at this point to target the national media for coverage, except in the context of a locally-based project.

Public Awareness

There is little public awareness of the ITS/CVO program or its individual projects.

Marketing Channels In Use

Marketing channels that are already being employed include various committees, publications, trade shows, conferences, and local chapters of trade associations. Key channels among these are:

- American Association of Motor Vehicle Administrators (AAMVA)
- American Bus Association (ABA)
- American Trucking Associations (ATA)
- Commercial Vehicle Safety Alliance (CVSA)
- Independent Truckers and Drivers Association (ITDA)
- ITS America and State Chapters
- National Private Truck Council (NPTC)
- Owners, Operators, and Independent Drivers Association (OOIDA)
- United Motor Coach Association (UMCA)

OMC's Expanding Role and Identity

A successful ITS/CVO program will entail a continuing effort (implicit to the program) to transition the federal role from regulator to regulator, educator, and partner. In support of this change, the report from the Marconi Conference on Strategic Directions for ITS Communications and Outreach (November 15, 1994), reads:

> The national ITS program needs to recognize and reflect the greater need for listening to the market. There needs to be a balance between planned deployment (push) and responsiveness to the consumer (pull).

Explicit discussion within the OMC about its "market identity" will help successful deployment of the ITS/CVO program. Management of perceptions both internally (providing leadership) and externally (delivery of messages) is important. A focused and enterprising communications program facilitates this process of identity change.

Marketing Program

An essential milestone of the ITS/CVO marketing program is the adoption in fiscal year 1996 of a Strategic Communications Plan. Other fiscal year 1996 markers in the program include: preparing training materials, conducting six focus groups, and expanding and refining media relations. In addition, development of an ITS/CVO "Technology Truck", use of the "Rover Van" for publicity appearances, an Internet site, standing and portable exhibits, videos, a graphic identity, brochures, slide shows, and user acceptance and cost/benefit studies are all part of the fiscal year 1996 marketing program.

The fiscal year 1997 ITSKVO communications and outreach program is under development.

EXECUTIVE INTERVIEWS

A series of executive interviews has been conducted to solicit representative viewpoints and suggestions from the spectrum of CVO stakeholders. Leaders from federal and state transportation agencies, law enforcement, regulatory agencies, motor carrier associations, manufacturers, academia and research institutes, operational test programs, commercial programs, industry and the Congressional Budget Office have been interviewed in an effort to reach a broad and representative cross-section of CVO audiences.

Response to the interviews has been overwhelmingly positive, and many participants have expressed optimism for the prospects of the ITS/CVO division and its proposed pilots, operational tests and programs. The sense of the interviewer is that many of the participants are appreciative of this opportunity to provide input into the program.

The list of twenty-seven interviewees, the eighteen questions that were asked, and the detailed responses are provided in Appendix I. The following eight key findings serve to briefly summarize the results:

1. The ITS/CVO program enjoys support from a core group of stakeholders.
2. The voluntary nature of the program is the key to success.
3. To relieve suspicion and develop trust, FHWA needs a sustained marketing effort.
4. Unions can be a show-stopper.
5. The ITS/CVO program is perceived as fragmented.
6. There is a need to educate key audiences about the program's costs and benefits. Key audiences are:

    - State and local elected and career officials
    - Key members of Congress and staff
    - Motor carriers and operators
    - State law enforcement personnel (4,600)

7. The program can take off once uniform technology standards are established.
8. Trucking industry advocates in Washington, D.C. support technology that improves carrier productivity, but do not uniformly support government's ITS/CVO efforts to apply technology in service to its regulatory function.

PROGRAM CHALLENGES

In the effort to ensure a successful ITS/CVO program, it is recommended that the following challenges be recognized and effective means of handling them be incorporated into marketing efforts.

1. Link safety and productivity benefits to ITS/CVO technologies.

2. Face effectively the difficult relationships and distrust that have developed between regulatory/law enforcement agencies and motor carriers/truckers.

3. Encourage the adoption of technology standards.'

4. Kindle interest in ITS/CVO among non-OMC FHWA headquarters and field staff and provide them with a clear knowledge of important ITS/CVO issues, projects and programs. OMC field staff have had few tools to change this situation. There is also a need to integrate ITS/CVO functions within state DOT agencies. Currently at the state level, there is a lack of auto/CVO integration in city, county and state planning. Too often CVO functions are isolated from other agencies within state DOTs. In many states, CVO is regulated by multiple agencies.

5. Help change law enforcement's perception of motor carriers and operators while at the same time supporting law enforcement's need to operate with greater efficiency. Too often the attitude of regulators and law enforcement has been that every commercial vehicle is an accident waiting to happen, regardless of the carrier's past safety and performance record. As a result of this regulatory environment, the trucking and motor coach industry tends to look upon all government initiatives with distrust. Industry associations need to protect their members from intrusive government behavior and regulation.

6. Encourage federal and state governments to include more motor carriers and operators in program and policy deliberations. To date, insufficient effort at both the federal and state levels has been expended to include motor carriers and operators in this area. ***The National Program Plan for ITS*** observes that "truckers were not involved in the development of CVO initiatives" during the 1980's. (It is noteworthy that motor carrier involvement in ITS America is limited.)

7. Work with industry to move the program forward while realistically handling fears of weight-distance taxes.

8. Address effectively industry and driver concerns on privacy issues.

9. Deal effectively with industry's ambivalence towards the ITS/CVO program.

10. Answer the following key objections to the program effectively:

- ***Won't electronic records transfer allow regulators to pry more precisely into carriers' proprietary information?***
- ***Won't electronic clearance/safety inspection of transponder-equipped trucks allow unsafe ones to slip through the cracks?***
- ***Won't participation in the program be mandatory rather than voluntary?***
- ***Won't states lose revenues due to standardized tax regulations?***
- ***Doesn't the introduction of ITS/CVO technology in trucks and buses mean ceding control of commercial motor vehicles to computers?***

AUDIENCES

It is important to identify ITSKVO audiences, then design and deliver messages specific to each of them. There are internal and external audiences whose awareness, understanding and support are necessary for program success.

Audiences can be conceptualized as a series of concentric circles, with the ITSKVO Division of the Office of Motor Carriers as the nucleus. (A graphic presentation of this target audience concept is provided in Appendix G.) Questions to answer when identifying audiences and developing messages are:

- Who are the audiences?
- What do we want them to know?
- What do we want them to do?
- What do we have to understand to be effective?
- What do we have to do?

The communications program of the ITSKVO Division of OMC must not attempt to reach all possible audiences. Nor will all audiences targeted require the same emphasis, nor are they all to be reached at the same time. For example, it is important that within a particular state, leaders among motor carriers and regulators be supportive of the program before state legislators are approached.

Internal Audiences

Internal audiences include those people who have a direct impact on, are responsible for, or who will interact with the ITSKVO programs and activities as they are implemented in the field. These are FHWA decision-makers, FHWA/OMC/Federal Aid staff (field & headquarters), and State agency MCSAP representatives.

Identification in the executive interviews of a disconnect between FHWA headquarters initiatives and the field's possession of resources to implement underscores the need to focus on internal FHWA audiences.

External Audiences

External audiences include those individuals who have a direct impact on, are responsible for, or who will support, implementation of ITS/CVO technologies. These include state and local government and their motor carrier regulatory function, the motor carrier industry, NAFTA partners (Mexico and Canada), the media, and the public.

Seven Existing Target Audiences

The following table contains recommendations of audiences to be targeted and methods and means for reaching them.

ITS/CVO Existing Target Audiences	Communication Channels, Methods, and Tools
Federal Government	
FHWA Decision Makers	Technology Truck; Rover Van; Communications of Results; Media Coverage; 3rd Party Advocacy; Training Programs
FHWA/OMC Staff	Field & HQ Training; Internal Communications; Professional Associations; (plus the above)
FHWA Federal-Aid Staff	(Same As Above)
Non-OMC FHWA Staff	(Same As Above)
State/Local Governments	
State DOT Decision-Makers	Training; Professional Associations; Internal News and Information Sources; General and Trade Press; Technology Truck; Rover Van
State/Local Regulatory Agency Decision-Makers	Professional Associations, Internal News and Information Sources; General and Trade Press; Technology Truck; Rover Van
State/Local Enforcement Officers	CVSA; Professional Associations; Internal News and Information Sources; General and Trade Press; Technology Truck; Rover Van
State/Local Elected Officials (ICCMA, NaCo, USCM, NGA, NCSL)	Professional Associations; Internal News and Information Sources; General and Trade Press; Technology Truck; Rover Van
U.S. Congress	
Congress Members and Staff	Technology Truck; Rover Van: Visits By OMC, Industries, and States; Media Coverage: Brochures With Benefits and End-User Testimonials
Public/Private Consortia	
ITS/CVO Program Designers	ITS/CVO Committees/subcommittees of ITS America
Industry	
Motor Carrier Management	Professional Associations; Industry Groups; Internal News and Information Sources; Technology Truck; Rover Van
Motor Carrier Safety Representatives	Professional Associations; Internal News and Information Sources; Technology Truck, Rover Van
Commercial Vehicle Drivers	
Drivers	Professional Associations; Truck Stops; Publications; Technology Truck; Rover Van; Unions

ITS/CVO Existing Target Audiences	Communication Channels, Methods, and Tools
Manufacturers/Suppliers	**Trade Associations; Industry Groups; Technology Truck; Rover Van; Trade Publications**
General Media	
Broadcast and Print Media	**Technology Truck and Rover Van; CVISN; MCSAP - Portable Computers at Roadside**
General Assignment and Business Press	**Technology Truck and Rover Van: CVISN; MCSAP - Portable Computers at Roadside**
Public	
General Public	**Through the Media; Technology Truck; Rover Van**

New Audiences

The value developed by the improved quality and access to motor carrier information will result in the emergence of new interest groups and will increase awareness of the availability of the information, its value and application in each audience's areas of interest. To determine the value, follow the freight to see where there are improved efficiencies and for whom. New audiences include:

- Shippers (Shippers are increasingly influencing how the trucking industry operates by dictating specific requirements of how a carrier operates.)
- Insurers
- Organized Labor
- Vehicle Rental/Leasing Companies
- State Agencies Newly Affected (e.g., health department functions are affected by reduced response time for remote accidents)
- Prosecutors (is electronic data capture admissible and sufficient?)
- National Park Service
- National Weather Service
- Federal Aviation Administration

Prioritization and Phased Target Approach

Audiences need to be prioritized and approached in a phased, planned manner, and in accordance with available resources. This critical need is included in the strategic recommendations that follow later in this Plan.

MESSAGES

Existing ITS Program Messages

The following table shows the evolution of general ITS messages:

Date	Message(s)	Audiences	Message Developed By
Pre-1994	None	NA	NA
1994	*Moving Transportation into the Information Age*	Internal ITS Community General Public	ITS America Communications and Outreach Task Force
Jan. 1996	*ITS saves time*—ITS can cut 15 minutes off your commute U.S. DOT sets a *national goal to* build an intelligent transportation *infrastructure (ITI)* in the largest *metro areas* Systems integration	American traveling public Transportation professionals State, county, city managers Elected officials	JPO for ITS. (Launched as Operation TimeSaver, Building the Intelligent Transportation Infrastructure speech by Secretary Pena 1/11/96))
June 1996	*Saves Money, Saves Lives, Benefits Now*	U.S. Congress Members and Staff National media	Friends of ITS

Existing ITS/CVO Program Messages

The following chart shows the evolution of ITS/CVO messages:

Date	Message(s)	Developed By
Pre- 1994	None	NA
1994	Serving your technology needs	OMC
1995	*Assisted by technology,* trucks *and buses will move safely* and *freely throughout North America*	OMC/ITSA
1995	lose Wait	Advantage I-75
1995	*Because Time Is Money*	PrePass
1996	*Facilitating safety and productivity*	OMC
1996	*Partners enhancing* motor *carrier* safety and efficiency	CVISN

Program Positioning With New ITS/CVO Slogan, Three Benefit Categories, and Logo

To best position the ITS/CVO program the new slogan, ***Safety, Simplicity and Savings for government*** and industry, will be instrumental. This new slogan incorporates three benefit categories which are detailed in the following table:

MESSAGES FOR CVO AUDIENCES Safety, Simplicity, ***and Savings***						
Benefits	U.S. Congress	State/Local Government	State Law Enforcement	Industry	Media/ Public	Motor Carrier Drivers
General **Theme**	**ITS/CVO enjoys widespread support: doubling of traffic congestion by year 2020 will affect American competitiveness**	**The trucking industry keeps American business moving. Do more with less.**	**Proven technology streamlines operations and makes enforcement procedures more efficient**	**Voluntary program, developed with industry at the table**	**This program is an example of government at its best, using technology to save everybody's time and money**	**Useful, reliable, and effective technology making the job easier**
1. Safety	Government doing what it does best; allows for better management of program, better compliance	Allows regulators to focus on unsafe carriers, drivers, vehicles	Allows officers to focus on unsafe carriers, drivers, vehicles	Separates high-risk from low-risk carriers; prevents accidents by focusing on unsafe carriers, drivers, vehicles	Much more effective use of limited government resources to track unsafe commercial vehicles	System warns of malfunctioning equipment before accidents happen; safer driving
2. Simplicity	Simpler is better, and is made possible with existing technology	Once available technology is in place, everything functions more simply.	Technology exists today and has a proven track record	Existing technology streamlines operations; not another layer of regulation	Existing technology with proven track record is simplifying government processes	Existing technology allows credentials and licenses to be obtained from the office computer, simplifying process

MESSAGES FOR CVO AUDIENCES Safety, Simplicity, and *Savings*						
Benefits	U.S. Congress	State/Local Government	State Law Enforcement	Industry	Media/ Public	Motor Carrier Drivers
3. **Savings**	**Cuts federal administrative costs; allows resources to be focused at problems; streamlines revenue collection**	**Do more with existing funds: streamline revenue collection; govt/industry cooperation reduces costs, cuts through bureaucracy; costs less than new construction**	**Less time spent identifying unsafe drivers: more efficient revenue collection process; reduced administrative tasks**	**Less time is spent on administrative chores; makes trucks, drivers more productive; safety lowers operating costs, impacts industry's bottom line**	**Good use of tax dollars; more can be done with existing resources**	**Little or no time is spent sitting in weigh/ inspection stations; save time; make more money**

In accordance with the five-year plan of the ITS/CVO Division of the OMC, the ITS/CVO program provides safer roads and more efficient driving, while enhancing the bottom line. The ITSKVO program improves and simplifies government functions. Starting in 1998, the program can begin to be presented as an example of government at its best. ITS/CVO is all about working smarter. ITSKVO:

- addresses problems at their source,
- brings different interests together
- saves American lives, time, and money, and,
- minimizes federal government's role (e.g., CVISN).

Through the ITSKVO program, state and local government have a solid and affordable program for helping to keep our roads safe at a time of decreasing budgets and increasing commercial vehicle traffic.

It should be emphasized that the program supports motor carrier safety and efficiency; not one at the expense of the other. Safety, for industry, lowers operating costs, impacting the bottom line. In 1995, 4,615 heavy trucks were involved in fatal accidents in the U.S. in which 5,112 people died. Economic losses from such accidents include: loss of lives, injuries, loss of income, repair costs, worker compensation, management attention, and damaged industry reputation.

Before using the new messages on targeted audiences, it is recommended that the messages first be tested on selected individuals in the U.S. Congress and the motor carrier community.

Further program positioning will be obtained through use of the new ITSKVO logo. (This new ITSKVO logo is provided, in color, in Appendix H.) All ITSKVO messages and projects should be

branded with this recognizable "stamp". This logo should be promoted on FHWA ITSKVO correspondence. ITSKVO program practitioners should be encouraged to use it.

In explaining the program, the first message tier after "'Safety, Simplicity, Savings" explains the three operational areas to which the application of ITSKVO technologies are bringing benefits. These are:

1. Roadside Safety Systems
2. Administrative and Operational Systems
3. In-Vehicle Systems

The description of these areas can be simplified as follows:

1. "At the Roadside"
2. "In the Office"
3. "In the Vehicle"

Audiences should not be spoken to in terms of ITSKVO user services.

Message Reinforcement With Three Project Examples

It is essential when targeting a particular audience to use a limited number of project examples that clearly make the appropriate messages come to life. Three fiscal year 1997 projects that fall into that category are:

1. Electronic Clearance
2. CVISN prototype and model deployment pilots
3. Portable computers at roadside

Project examples need to be chosen from the target audience's point of view to ensure the quickest and easiest buy-in. The above three examples target the audiences: motor carriers, state government, and law enforcement.

STRATEGIC RECOMMENDATIONS

The Communications Plan offers ten strategic recommendations to serve as guidelines when developing and implementing tactical communication plans and projects.

1. Define ITS/CVO simply and visually. (Using the slogan identifying three benefit categories, the icon, and project examples.)

   - Communications need to emphasize benefits first, not the technologies.

   - Do not promote programs by leading with their acronyms and bureaucratic distinctions. Instead, explain what the programs do and the value they bring.

2. First provide internal audiences with a solid understanding of the overall program, the communications strategy, and program messages. Upon this foundation, target external audiences.

3. Ensure that FHWA headquarters and field staff convey the same program messages.

4. Deliver tailored key messages with a program for each key audience.

5. Prioritize audiences and roll out the campaign in a phased approach.

6. Develop and support three champions from each market segment.

7. Focus on 3-5 key states during the next 12 to 18 months. Utilize state chapters of key organizations such as the American Truckers Associations (ATA), The Intelligent Transportation Society of America (ITSA), the National Conference of State Legislatures (NCSL), the National Governors Association (NGA), the American Association of State Highway and Transportation Officials (AASHTO), and the Commercial Vehicle Safety Alliance (CVSA).

8. Prepare now for national media exposure in 1997.

9. Explore the possibility of an ITS/CVO annual meeting to help establish program identity, brand name, and markets.

10. Use the Technology Truck and the Rover Van for all they're worth, as they are both excellent marketing tools.

CONCLUSION

The Federal Role

There is a need to define explicitly the federal role in communications and outreach, so that all involved share a common understanding. Only the federal government can provide the vision, cohesion, plan, and strategy. Only the federal government is positioned to provide management and oversight during program implementation. However, there are often more effective and appropriate communicators, closer to the target audiences, than the federal government. These communicators need to be identified, supported and nurtured. For example, state governments-who are the customer of the federal government-are closer to the ITS/CVO customer. Yet state agency employees tend not to be effective message carriers to their own state legislators. In insuring that a specific program is effectively implemented through a state, the ITS/CVO division office and the Joint Program Office (JPO) for ITS need to include state-initiated communications and outreach needs as a program component to be guided and monitored along with the technology side of the project. Some Requests For Proposals should include requirements for conducting outreach consistent with the approved strategic communications and outreach plans of the JPO, the OMC and its ITS/CVO Division.

Strategic Imperative

The national ITS/CVO program encompasses and must link the responsibilities of federal, state and local government transportation, regulatory and law enforcement agencies with the private sector commercial vehicle industry's need for ever-improving productivity in a highly competitive, low-margin business.

ITS/CVO Program Control and Evaluation

The effectiveness of the marketing and communication program needs to be measured. This will be accomplished using the following methodologies:

- Executive Interviews in June/July 1996 and then again in mid-year 1997.
- On-going attitude and opinion studies will track awareness, understanding, and support among targeted audiences.
- An audit of press coverage in September 1996 and November 1997 can track the effectiveness of the media relations component of the marketing program.
- Follow-up focus group meetings in fiscal year 1998 can help evaluate the effectiveness of marketing efforts based upon this Plan.

APPENDIX A
COMMUNICATIONS TO U.S. CONGRESS

Target	Members of U.S. Congress and Staff
Rationale	They pay the bills.
Goal	Maintain funding levels based upon identifiable supporters. Identify, cultivate 3 champions in the House, 2 in the Senate, and staff members on House Appropriations and House and Senate authorizing committees.
Audience Resistance	Busy schedules. Industry ambivalence.
Approach	Through state and local elected officials; informational from U.S. DOT; trade press articles; Friends of ITS; industry testimony
Slogan	Safety, Simplicity, and Savings
Messages	Capability by 1998 to connect 50 states into united and distributed information systems. On track to comply with legislation to phase-out most federal involvement in CVISN by 2001. Safety-based performance measures with benchmarks. Benefits-oriented approach-to state government and motor carrier industry. Same program provides safety ***and*** productivity improvements. Not one at the expense of the other. "The ITS projects with the greatest potential effects on productivity-or at least those in which productivity effects are most directly identifiable-are ones that have applications in the area of commercial vehicle operations."

Intelligent Transportation Systems and Policy
Report of the Congressional Budget Office, Natural Resources and 'Commerce Division, October 1995

Federal government, state government and industry are collaborating in program design and implementation

Motor carrier industry (truck and bus) regulatory reform is dependent on CVISN.

Faster border clearance of trucks enhances international competitiveness.

Answers to 3 Key Questions

I. Why Do We Need an ITS/CVO Program?

- Improve safety and compliance

Information-based technology helps target high risk carriers, vehicles, and drivers. This technology can be deployed at the roadside, desk and onboard to warn drivers of impending trouble.

- Keep freight and passengers moving

The great era of American road building came to an end with the completion of the Interstate Highway System. As the population and traffic continue to increase, highway capacity remains nearly static. The result is that America's highways are becoming America's warehouse. America's transportation system is no longer providing the competitive edge over our international competitors that it once did.

- Free motor carriers from an onerous and costly inefficient regulatory process

Some regulatory agencies need help, standards and incentives to modernize (computerize) their operations and procedures. This improves state government and carrier efficiency.

- Improve government services in an era of shrinking resources

Budgets at the federal and state government levels are'being cut, so more must be done with fewer resources.

- Help improve industry productivity

Carriers often operate on razor-thin profit margins; anything that improves their productivity will improve their bottom line.

- Enable federal inter-agency cooperation

Recent legislative mandates (NAFTA, Clean Air Act) require U.S. DOT to work with agencies that lie outside the department's traditional transportation role. U.S. DOT must now share information and work with such non-transportation-related agencies as the Commerce Department, Environmental Protection Agency, Federal Communications Commission among others. Retrieving vital information can often take days, weeks or months to change hands under existing systems.

2. What Benefits are Available?

- Safety improves because states can focus time and resources on unsafe carriers, vehicles, and drivers, due to electronic identification clearance/safety inspection/weigh-in-motion technologies. Regulatory agencies and law enforcement can free up compliant carriers from unnecessary inspections.
- Safe and legal drivers save time because ITS/CVO technologies reduce the time drivers spend sitting in lines at crowded inspection stations, border crossings or spot inspections.
- Administrative costs decline for government (federal and state) because of easy electronic access to accurate records.
- Administrative costs decline for industry because many transactions with government can take place through electronic data interchange (EDI) from the office computer, a third party, to one location.
- Government improves its revenue collection capabilities and protection of the infrastructure.
- ITS/CVO facilitates regulatory reform. Existing rules and regulations, which may be outdated, redundant or contradictory, are examined and changed, and the process is streamlined as part of the design and implementation of automation.
- Government agencies and the private sector develop ***partnerships*** and more flexible relationships that benefit the public. Synergies of interests and resources can evolve.
- Electronic one-stop (or no-stop) shopping for licenses, permits and tax payment will save motor carriers and states money and time.

3. What is the Federal Role:!

- Provide Vision

  Under recent legislation (ISTEA-Intermodal Surface Transportation Efficiency Act, National Highway System Designation Act), the relationship between U.S. DOT and state DOTs is changing. The states are assuming a greater role in deciding what projects they will undertake and how their federal funds will be spent. One of U.S. DOT's major functions in this changing landscape is to provide a national vision for technology deployment and to ensure that safety-based performance measures are incorporated in every CVO project.

- Insure Connectivity

  Only the Federal government has the authority and resources to develop and coordinate any electronic system that ties together all of the numerous agencies that regulate CVO within each state.

- Obtain Standards

  Today, there is a lack of standards for CVO compliance and for uniform, reliable information to support nationwide CVO service. U.S. DOT is needed to establish the program that results in industry self-selecting the best standards.

- Fund Research

- Create climate conducive to escalating deployment

APPENDIX B
COMMUNICATIONS TO STATE LEGISLATORS

Target Key state legislators among total of 7,400 nationwide.

Rationale The ones who are paying the bill.

Goal Gain support to implement relevant parts of the ITS/CVO program

Audience

Resistance Lack of funds. Lack of full support from industry. Lack of interest. Perception that a truck is an accident waiting to happen. (For example, the public perception that trucks cause more than their share of accidents on the Washington, D.C. Capital Beltway is not supported by studies that show in 73% of accidents involving a commercial vehicle, the fault does not lie with the truck driver.)

Weigh-in-motion is a low priority for most states. Even with federal money, many states may not be able to come up with their 20 percent match. Federal financing of research but not deployment presents a serious problem to the states.

State DOTs are passenger car-oriented. Their point of view is that trucks are already damaging the roads, so why make life easier for them. When the issue is patching potholes vs. helping truckers, potholes win.

Major carrier participants with large investments in proprietary dispatching and vehicle location systems may not support a level playing field by sharing information with competitors.

Approach Get the private sector on board before approaching legislators.
Obtain a minimum of five solid third party supporters.
Prepare success stories from other states.
Get on program agenda of National Conference of State Legislatures (NCSL), National Governors Association (NGA), U.S. Conference of Mayors (USCM), and others.
Encourage site visits by legislators.
Support the legislative approach with media relations.

Guidance The first presentation to a legislator needs to state in 5 minutes:

- The objectives of the program.
- The costs/benefits.
- The results to the state; to motor carriers?
- More cost to the state or less?
- Involves more bureaucracy or less?
- How much money saved?
- The end results of doing the total program.

Messages

Cuts your administrative costs.
Improves safety.
Streamlines revenue collection.
Simplifies operations.
Let's you do more with existing resources.
Enables selective enforcement and inspection of unsafe carriers, vehicles and drivers.
Participation is voluntary.
ITS is all about working smarter.

Talking Points

Advantage I-75, migrating to Advantage CVO, begins to show us what the future could look like.

Utah is an example of state initiative without federal funds.

The CVISN prototype program (Maryland and Virginia) and the seven pilot projects (California, Colorado, Connecticut, Kentucky, Michigan, Minnesota, Oregon/Washington) are improving automation of data and inter-state communications.

Frame weigh-in-motion benefits as an issue of paying for technology or infrastructure. Either build a weigh station at a cost of $5 million, or spend $500,000 to make the operation work more efficiently through technology.

An ITS/CVO program makes everything simpler:

- Less delay for motor carriers
- Less human resources needed by the state and FHWA
- Reallocation of human resources for more effective enforcement
- Accurate and faster information gathering and retrieval
- Improved safety because inspectors can focus on unsafe carriers

APPENDIX C
COMMUNICATIONS TO MOTOR CARRIERS

Target Motor carrier industry: trucks and buses

Rationale The ones who use the program.

Goal Support of program, manifested in visits to state legislatures and U.S. Congress and in the motor carrier industry's adoption of ITS/CVO technologies.

Approach Identify, organize peer-to-peer program of private sector champions.
Obtain a minimum of five third party supporters.
Work with state chapters.
Get on panels at association meetings and exhibit at expositions.
Prepare success stories from other carriers.
Support the approach with trade press articles.

Audience Resistance Fear that ITS/CVO will lead to increased taxes and more regulation; hidden agenda to bring more regulation under the guise of safety.

Don't want government having so much information. (However, government already has the information.)

Major carrier participants with large investments in proprietary systems don't want to level the playing field by sharing information with competitors.

A level playing field regarding safety regulation is desired; however, this must be achieved without the danger of the government sharing competitive information among carriers in competition with one another.

The government will seek to mandate technology implementation on the motor carrier industry that is not cost effective.

The program should have a market-based approach. Government does not tend to understand and/or care about market forces.

Drivers do not like the idea of driver/vehicle monitoring systems. Teamsters oppose it. (Most insurance companies are likely to oppose the systems, also.)

Message Themes

1. VOLUNTARY: Voluntary program
2. SAFETY: Safety and loss prevention
3. SIMPLICITY: Cut administrative costs; expediency in service area
4. SAVINGS: Efficiency and productivity gains; reduction in fuel and maintenance costs
5. PRIVACY: Government already protects proprietary information all the time.

Background to message themes

1. VOLUNTARY: ITS/CVO is a Voluntary Program

- Trucks and buses: You get to choose whether it works for you.

2. SAFETY: Safety and loss prevention

- Trucks: reduced congestion in weigh stations reduces accident potential. Fewer roadside inspection stops reduces the problem of merging with traffic when departing weigh stations and ports of entry.
- At Ruan Transportation Management Systems (Des Moines, Iowa) workers compensation is down 45 percent; liability premiums are down 68 percent.
- Buses: Industry can obtain information on a driver it's considering for hire. (Driver can obtain the same information electronically.)
- Both: Driver communication to local authority/service when in need (accident; breakdown; in-vehicle incident on a bus)

3. SIMPLICITY: Cut administrative costs and ***expediency in service areas***

- Trucks that keep moving have au edge on the competition. (Need to be in the upper 90 percent in on-time delivery)
- Electronic payment services
- Electronic purchasing of credentials. Electronic clearance keeps trucks and buses moving down the road. Driver gets in more miles on a one-day trip. This means more change in the pocket for the driver.
- Colorado Ports of Entry report a 5-to-l benefit to motor carriers. Savings of 4 minutes at $2 a minute for a cost to the carrier of $8 a stop. 1,500 trucks; 700,000 hours a year; $4.1 million a year savings in lost payroll.
- Loss ratios drop rapidly. Insurance is third largest cost of a motor carrier. In all cases, adopting driver/vehicle monitoring systems technology has resulted in lower rates. (Great Western Insurance,

Phoenix, reports that a 790 unit carrier in Texas reduced insurance costs by $500,000 a year. Another company dropped from 403 percent to 27 percent loss ratio over 3 years).

4. SAVINGS: Efficiency and productivity; reduction in fuel and maintenance costs

- Trucks: Fuel savings by continuing on down the highway
- Less wear on clutch, brakes, drive tram by not having to slow down, stop and accelerate to highway speed
- Buses: Electronic clearance and toll collection help buses improve scheduling.
- Both: Traffic management based on more efficient systems through implementation of ITS technologies helps traffic flow at a time of 178 million vehicles and 1.3 trillion vehicle miles a year and growing.
- Smart Card technologies can help both industries.

5. PRIVACY: Safeguarding of proprietary information

- The government has a long history of protecting proprietary information. So does the commercial banking industry. Both the institutional history and the technology exists so that, for example, a carrier can get information on his own company at any time but not on another company.

Guidance Presentations to include:

- The objective of the program
- What is the program
- Projected and actual costs/benefits
- Industry concerns
- Response to industry concerns
- Summary and next steps

APPENDIX D
COMMUNICATIONS CONCERNING CVISN

Target State agency officials; state legislators and top executive branch officials; motor carriers

Rational The ones to implement and use the program

Goal The government role (federal, state, local) over the next 10 years is to insure that accurate information is available in electronic form and that information is utilized by the nation's commercial vehicle operations to improve the safety and efficiency of operations.

Approach Gain evolutionary success in Maryland/Virginia, then tell the story.

Audience Resistance Intrastate, interagency relationships; interstate issues, ongoing funding after initial federal start-up funds.

Benefits REDUCED GOVERNMENT: CVISN is a time-limited program with a decreasing federal role.

SAFETY: ITS/CVO enables law enforcement to concentrate its roadside safety inspections on high-risk and uninspected carriers, drivers, and vehicles, to prevent accidents from happening. Timely and accurate information helps motor carriers maintain effective safety programs.

SIMPLICITY: The idea is simple. Instead of making motor carriers go here, there and everywhere to receive government credentials, have them go to a single place for services, or go nowhere and use their computer at their own place of business. Call it "one-stop shopping," or even "no-stop shopping."

SAVINGS: Motor carrier operators are required to purchase the necessary licenses and permits in every state in which they operate. The number of agencies regulating commercial vehicle operations varies from state to state. As a result, carriers must navigate a complex and costly process just to earn the right to pursue their regional business. But now, licenses, tax permits, inspection and other information will be available electronically to regulators at all levels.

There exists a firm consensus within government and the commercial vehicle industry about the benefits of an integrated delivery system.

Background to Benefit Messages

Implementation of the Commercial Vehicle Information Systems and Networks (CVISN) program will result in enhanced safety for drivers and trucks and improved operating efficiencies for government agencies and motor carriers. In turn, both the public and private sector participants will realize savings in time, resources and the cost of doing business. The benefits include:

1. SAFETY

- The number of trucks that must stop at weigh stations will be reduced.
- Reduced congestion at weigh stations will mean shorter lines of trucks backed up.
- Law enforcement will be able to concentrate its efforts on high-risk and uninspected carriers and operators.

2. SIMPLICITY

- Simplified, automated screening and targeting of high-risk operators improves enforcement efficiency.
- Standardized data exchange makes for a simpler, more efficient work day for motor carriers, drivers, and regulators alike.
- Low risk carriers, vehicles and drivers face fewer and simpler roadside inspections.
- Applications can be easily filed from the motor carrier's administrative offices.
- Motor carriers can get better information quicker from regulatory and enforcement agencies.

3. SAVINGS

- Electronic screening will eliminate the need truckers to stop for unnecessary weight and safety inspection
- Automated reporting and record keeping technology will reduce costly paperwork for government and motor carriers.
- Motor carriers no longer have to go in person to file applications at each of the agencies that regulate the company's business.

- Government agencies will be able to process license and certificate applications more quickly and accurately.
- Electronic screening will reduce the number of stops and starts commercial vehicles must make, thus reducing fuel consumption and time idling in lines at weigh stations.
- As vehicles keep moving, the flow of goods from manufacturer to distributer to consumer is streamlined and on-time deliveries will improve.
- The new technologies are cheaper to install and use than constructing new weigh stations. They also improve the efficiency of existing facilities.
- Existing highway infrastructure and facilities can be used more effectively.
- In an era of shrinking budgets, electronic screening technologies allow government agencies to shift personnel and resources from processing paperwork to other tasks.
- States will be able to more effectively collect taxes and other revenues.

APPENDIX E
STUDIES, STATEMENTS, AND RESOLUTIONS

There have been a number of research studies that help to inform the communications and outreach effort of the national ITS/CVO program..

1. ***User Acceptance* of *Commercial Vehicle Operations Services: Critical Issues Relating to Acceptance of CVO Services by Interstate Truck and Bus Drivers,*** Prepared by; Penn & Schoen Associates, Inc., Under Contract to FHWA August, 1995
2. ***Benefit/Cost Analysis of ITS/CVO User Services,*** Prepared by the American Truck Associations Foundation, Inc. Providence, Rhode Island 1996 Under Contract to FHWA
3. ***Institutional Barriers to the Deployment of CVO/IVHS Innovations in Ohio,*** Prepared by Ohio State University in cooperation with the Ohio DOT and FHWA, Columbus, Ohio, June 1995.

Key comments from evaluation forms filled out by participants in six ITS/CVO Informational Focus Group Meetings held in 1996 follow:

- Focus group meetings are useful. More carrier involvement is needed in the meetings.
- There is a concern that fatigued drivers can not be detected when deciding which trucks are allowed to bypass inspection stations.
- Focus group meetings will help to alleviate criticism of those who don't understand that these programs are in the developmental stages.
- As an ITS vendor it is invaluable to hear from drivers and enforcement officers about their reactions to ITS programs.
- Don't forget the importance of vehicle and driver safety verification programs.
- I feel a lot of this technology is neither conceived nor designed for logistically practical use for those of us working the highways.
- Change is unknown territory. Meetings like this help to prepare those who will be expected to implement new changes and technologies.
- I'm glad I had an opportunity to provide input from my field perspective.
- I learned from other states how they are doing things.
- ITS/CVO needs to concentrate efforts on drivers.
- We need more trucking companies. This need should be mentioned at trucking association meetings.
- This information needs to get out to all front line enforcement staff.
- Driver fatigue causes most truck accidents, yet ITS/CVO does not address this.
- You need to broaden the audience. State DOT engineers from field and HQ should be included in these meetings.
- As a police officer I would like to have a centralized information system which tracks vehicles.

- You need much more industry involvement, so they will be informed of capabilities and benefits, and so they will therefore buy into the sharing of costs.
- This was very useful because few state leaders pass anything along to subordinates.
- We need to extend the outreach program and include more industry.
- I liked that both the industry and enforcement perspectives (with contrasting views) were presented.
- I was able to meet other people from different agencies in the commercial field.
- More needs to be done with information available to prospective employers when assessing driver applicants, particularly concerning safety violations and drug and substance abuse.
- I learned that there are no easy answers. We need to work on replacing the current processes, and not automate the existing poor ones.
- How do we get feedback that is unfiltered and honest? I'm concerned we're going down the automatic "This must be great" path.
- Many important players miss these meetings. There is a need for one-to-one contact with industry in order to get them to attend these sessions.
- The information provided will assist me in the training of our company managers and employees about the merits of new and improved technology.
- I suggest you consider "paying" CVO people to attend. Given that they tie private entities, they are "losing" income by attending. This forum can only be enhanced with broader participation.
- These meetings are very informative. There is a lack of motor carrier support, so there is a need to continue the outreach program.
- Give more advanced notice for these meetings so the states can include interest groups.
- It is valuable to hear the technology concerns of industry and law enforcement.
- This helped me gain information on how technology will benefit the trucking industry.

The remaining pages in Appendix E contain the following three documents:

1. The National Conference of State Legislatures' (NCSL) Resolution, July 30, 1996
2. Governors Statement in Support of Advantage I-75, August 20,199l
3. Summary of Comments from 22 States to the CVISN Pilot State Deployment Program Request For Information, May 1996

ITS RESOLUTION
ADOPTED BY THE NATIONAL
CONFERENCE OF STATE LEGISLATURES
JULY 30,1996

The National Conference of State Legislatures (NCSL) recognizes that a vast domestic market and a new high technology industry are moving American surface transportation into the information age to better serve customers.

Intelligent Transportation Systems (ITS) are being developed to enhance travel demand management, public transportation operations, electronic payment, freight management, commercial vehicle operations, emergency management, and advanced vehicle control and safety. Deployment of viable ITS can increase safety for transportation users, improve mobility, reduce congestion, facilitate interstate commerce, generate jobs, provide environmental protection, conserve energy, and facilitate intermodalism.

NCSL endorses the U.S. Department of Transportation goal of deploying basic ITS for consumers of passenger and freight transportation across the nation by 2005. These services should be integrated, interoperable and intermodal. NCSL recognizes that the private sector will lead in the development and bringing to market of reliable and affordable ITS, and that federal, state and local governments will lead in the deployment of a core intelligent transportation infrastructure to meet essential public needs, forming innovative partnerships with the private sector where appropriate.

LETTER OF SUPPORT
ADVANTAGE I-75

Americans today are demanding that surface transportation programs provide more efficient use of highways and transit, improve traffic safety and fuel efficiency, and improve the environment by reducing emissions. Intelligent Vehicle/Highway Systems (IVHS) technology offers an effective way to manage these challenges.

The ADVANTAGE I-75 project represents a public/private partnership along the Interstate 75 corridor to implement an effective IVHS Program, which recognizes that technologies are advancing rapidly and that early benefits can be realized by selective applications in the motor-carrier environment. ADVANTAGE I-75 focuses on the processes whereby existing technological advancements are assimilated into operational settings for motor carrier users of I-75.

It is the desire of the undersigned Governors to support ADVANTAGE I-75, and to endorse the continued efforts of each state to implement ADVANTAGE I-75 in a cooperative and coordinated manner.

Governor Wallace G. Wilkinson
Kentucky

Governor Ned Ray McWherter
Tennessee

Governor John Engler
Michigan

Governor Zell Miller
Georgia

Governor George V. Voinovich
Ohio

Governor Lawton Chiles
Florida

Signed this 20th day of August, 1991.

COMMERCIAL VEHICLE INFORMATION SYSTEMS AND NETWORKS (CVISN)
REQUEST FOR INFORMATION (RFI) COMMENTS

SUMMARY OF TWENTY-TWO STATES
AND TWO OTHER ENTITIES
5/2/96

1. Overall, the states had positive comments on the CVISN concept. They support CVISN and believe it is a worthy endeavor.

2. There were mixed reactions concerning the CVISN objectives. Several states had no comment, five states wanted more time, three states thought the objectives were fine, and one suggested we combine the seven objectives into two (enhanced enforcement and integrated services). Due to program goals, we will keep the seven objectives.

3. The Association of Waste Hazardous Materials Transporters requested that FHWA include hazardous materials transportation registration and permitting as an optional objective and require one pilot state to test this objective. The committee decided not to include this recommendation because of limited project time and funding, and because of the existing seven objectives.

4. The majority of the states believe the federal funding over a two-year period is appropriate. The committee agreed to keep the two-year funding period.

5. The states were split on the 50% minimum non-federal cost sharing. The committee agreed to keep the 50% requirement because of the strong emphasis in legislation on costing sharing and a way to screen for states with greater interest and chance of success as a pilot.

6. Several states were against giving extra credit for states that provide more than a 50% non-federal match. This selection criteria element has been deleted because it would impose a hardship on some states and could lead to a bidding issue between the states.

7. The majority of the states believe motor carrier support should be required/encouraged during the pilot, but there should be no required signature from the industry. The committee agreed to require documentation indicating motor carrier support in the request for application (RFA).

8. The states were split on the issue of requiring the Governor's signature on the MOA. The committee decided to keep this item optional.

9. A few states recommended that states be allowed to from CVISN private and/or public partnerships. The committee supports this concept and believes the RFI/RFA acknowledges this concept. Additional language was added in the RFA to clarify this issue.

10. A recommendation to delete the requirement for a 20% non-federal hard match was supported by the committee and the RFA will reflect this deletion.

11. Lockheed's comments:

A. Lockheed recommended that the reference to provide free Carrier Automated Transaction (CAT) software be deleted. Lockheed believes that would result in government competing unfairly with private sector participation in CVO deployment. The committee agreed with this request and will adjust the RFA to say that it is available from commercial sources.

B. The role of the private sector in CVISN should be clear. This issue is clearly defined on page three and eight of the RFI/RFA.

C. Lockheed believes the RFA should provide clear guidance to the states that their applications will be judged more favorably (included in selection criteria) to the extent that they involve the private sector, use technologies already in use, use approaches that will be financially self-sustaining, and provide technological compatibility and interoperability. Private/public partnering was an evaluation criteria in the RFI and will continue to be for the RFA. The committee believes the RFI/RFA adequately addresses the critical issues from these recommendations.

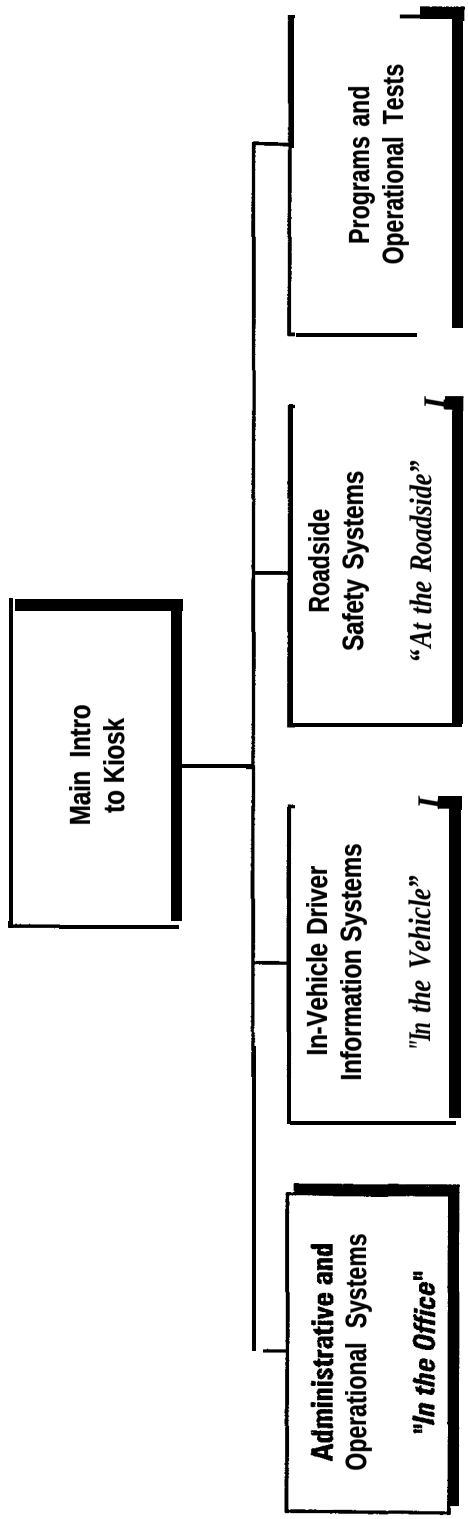
D. The CVISN should not assume or rely on federal funding beyond fiscal year 1997. The committee believes the RFI/RFA adequately covers this recommendation.

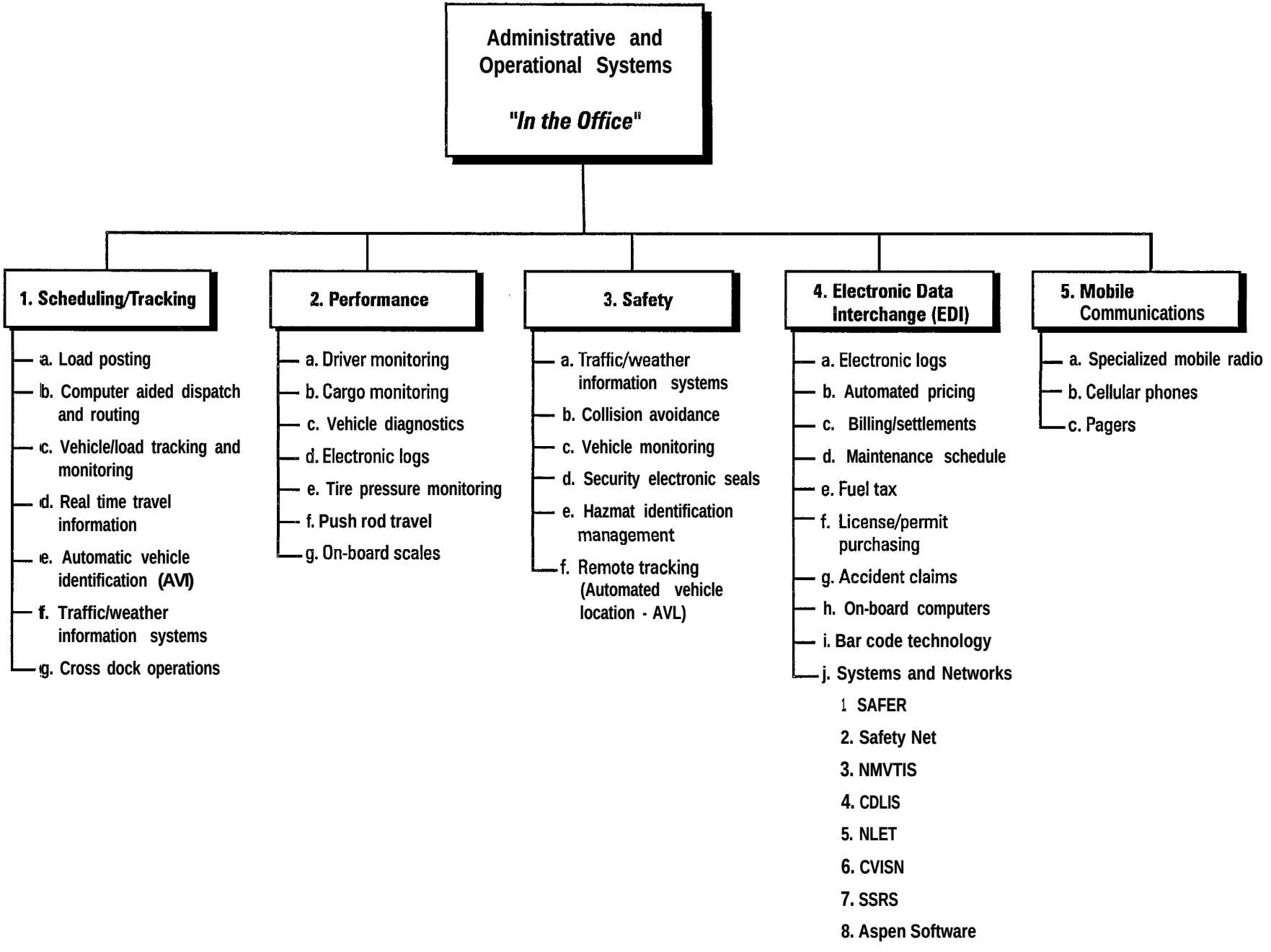
E. Interoperability with toll systems was also a concern. This issue is addressed in the RFI/RFA by requiring interoperability with major CVO clearance programs and encourages interoperability with toll deployment technology.

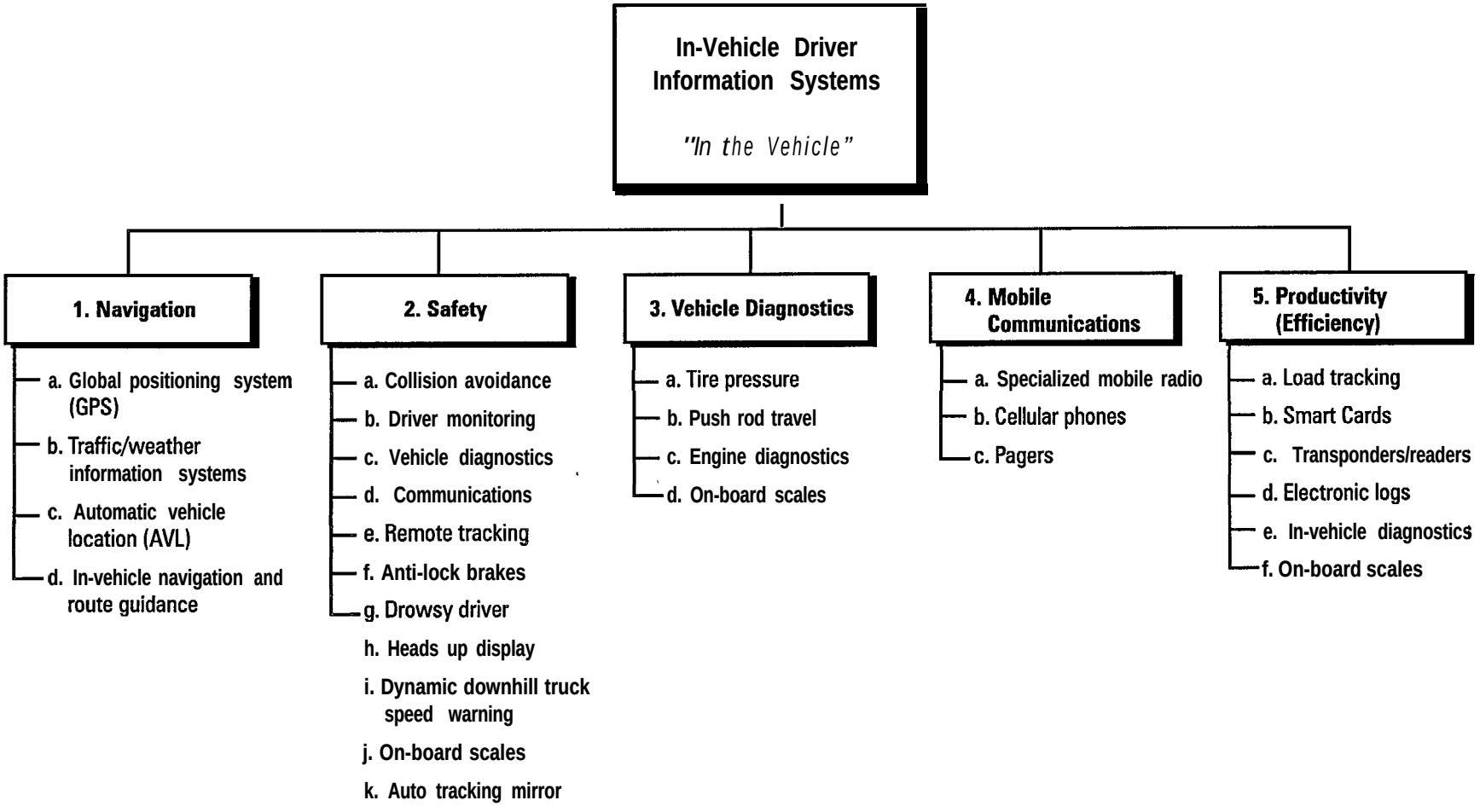
F. Mainstreaming discussion is not clear. Additional language that defines the regional champions and forums have been added to clarify this issue.

G. Evaluations should not be left to the end of the two-year period, but should be ongoing. The committee supports this and language is included in the RFA.

APPENDIX F
ITS/CVO TECHNOLOGIES
ORGANIZED BY 3 THEMES




Administrative and Operational Systems
"In the Office"
1. Scheduling/Tracking
a. Load posting
b. Computer aided dispatch and routing
c. Vehicle/load tracking and monitoring
d. Real time travel information
e. Automatic vehicle identification (AVI)
f. Traffic/weather information systems
g. Cross dock operations
2. Performance
a. Driver monitoring
b. Cargo monitoring
c. Vehicle diagnostics
d. Electronic logs
e. Tire pressure monitoring
f. Push rod travel
g. On-board scales
3. Safety
a. Traffic/weather information systems
b. Collision avoidance
c. Vehicle monitoring
d. Security electronic seals
e. Hazmat identification management
f. Remote tracking (Automated vehicle location - AVL)
4. Electronic Data Interchange (EDI)
a. Electronic logs
b. Automated pricing
c. Billing/settlements
d. Maintenance schedule
e. Fuel tax
f. License/permit purchasing
g. Accident claims
h. On-board computers
i. Bar code technology
j. Systems and Networks
1 SAFER
2. Safety Net
3. NMVTIS
4. CDLIS
5. NLET
6. CVISN
7. SSRS
8. Aspen Software
5. Mobile Communications
a. Specialized mobile radio
b. Cellular phones
c. Pagers


In-Vehicle Driver Information Systems
"In the Vehicle"
1. Navigation
a. Global positioning system (GPS)
b. Traffic/weather information systems
c. Automatic vehicle location (AVL)
d. In-vehicle navigation and route guidance
2. Safety
a. Collision avoidance
b. Driver monitoring
c. Vehicle diagnostics
d. Communications
e. Remote tracking
f. Anti-lock brakes
g. Drowsy driver
h. Heads up display
i. Dynamic downhill truck speed warning
j. On-board scales
k. Auto tracking mirror
3. Vehicle Diagnostics
a. Tire pressure
b. Push rod travel
c. Engine diagnostics
d. On-board scales
4. Mobile Communications
a. Specialized mobile radio
b. Cellular phones
c. Pagers
5. Productivity (Efficiency)
a. Load tracking
b. Smart Cards
c. Transponders/readers
d. Electronic logs
e. In-vehicle diagnostics
f. On-board scales

Roadside
Safety Systems
"At the Roadside"
1. Electronic Screening
a. Weigh-in-motion
b. Smart Cards
c. Electronic logs
d. License plate readers
e. Transponders/readers
f. Automatic vehicle identification/Automatic vehicle classification (AVI/AVC)
g. Counters/inductive loops
2. Safety Inspections
a. Portable weigh-in-motion
b. Portable brake testing systems
c. Log readers
d. License plate readers
e. Automatic vehicle classification
f. Bar code technology
g. UVI (pits, lighting, video)
h. Common violations
i. Commercial Vehicle Safety Alliance (CVSA) Level I inspections
j Aspen software
k. Portable computers
3. Communications Enforcement/Carrier
a. Signage
b. In-cab signals
c. Two-way communication

Programs and Operational Tests
a. Advantage I-75
b. Automated Compliance Review Program
c. Automated licensing and permitting
d. Automated Milage and State Crossing Operational Test (AMASCOT)
e. Black box
f. Brake testing
g. Collision avoidance
h. Commercial Vehicle Information Systems (CVIS)
i. Commercial Vehicle Information Systems and Networks (CVISN)
j. Commercial vehicle credential system architecture
k. Driver performance monitoring
l. Dynamic downhill truck speed warning
m. Dynamic stability systems
n. Electronic one-stop shopping
o. Electronic screening for border crossings
p. Green Light Project
q. HELP-CRESCENT
r. ITS/CVO mainstreaming
s. National Institute for Environmental Renewal (NIER)
t. Operation Respond
u. Out-of-state verification tests
v. Point of Entry Advanced Sorting System (PASS)
w. Roadside MCSAP computer system
x. SAFER
y. Smart Card

APPENDIX G

Target Audiences U.S. DOT's ITS/CVO Program 1996-2001

Year To Begin Focused Marketing Program

1996
1997
1998

APPENDIX H
THE NEW ITS/CVO LOGO

US Department of Transportation

APPENDIX I
EXECUTIVE INTERVIEWS
PARTICIPANTS AND RESPONSES

It should be noted that participants were free to decline answering any questions in the survey, and a few of them did choose not to answer one or more questions. Lack of background experience or expertise were the most commonly cited reasons.

Furthermore, because the interviewer was most interested in drawing out the participants' most candid responses rather than holding them to a clear-cut answer to the question posed, it may appear that some of the responses do not directly correspond to their questions. On some occasions, some of the questions seemed to strike a nerve, and the interviewee would speak at length, sometimes to the point and sometimes not. Sometimes the response was a single word. Every effort has been made to capture the essence, either in length or in brevity, of each participant's comments.

The breakdown of general audiences reached by interviewing the twenty-seven participants is as follows:

FHWA/OMC	1
U.S. Congress	1
State Law Enforcement	2
State Government (Non-Enforcement)	7
Public/Private Consortia	5
Motor Carriers	7
Industry (Non-Motor Carriers)	3
New Audiences	1

Participants

Dave Barry	National Private Truck Council
Lt. Ken Barton	Arizona Highway Patrol
Rita Bontz	Independent Truckers and Drivers Association
Carol Colman	Cambridge Systematics
Steve Crane	FHWA/OMC
Richard Easley	ITS America
Ken Evert	Oregon DOT
Lance Grenzebach	Cambridge Systematics
Don Hartman	Kentucky Transportation Center
Dick Henderson	CVSA
Paul Henry	Oregon Department of Transportation

Michael Jackson	ATA
Dick Landis	HELP, Inc.
Greg Lebedev	ATA
Norm Lindgren	Utah DOT
Norm Lintner	American Bus Association
Tom Maze	Iowa Center for Transportation Research
Bill McCall	Iowa Center for Transportation Research
Don Orne	PB/Farradyne
Nick Owens	Maryland DOT
Mary Grace Parker	I-95 Corridor Coalition
Elizabeth Pinkston	Congressional Budget Office
Mike Reilly	BCA Insurance
Jim Roberts	Kentucky Dept. of Vehicle Registration
Thorn Rubel	National Governors Association
Todd Spencer	Owner-Operator Independent Drivers Association
Stephen Sprague	United Motorcoach Association

Questions and Responses

1. What is the ITS/CVO program?

- ITS/CVO is the application of ITS technology to the freight hauling industry.
- The goal is to allow commercial vehicles to travel the North American continent safely, freely and efficiently.
- The lTS/CVO program allows states and industry to cooperate to reduce barriers to moving freight. The program promotes uniform regulation of commercial vehicles, safety standards, weight and dimension laws.
- ITS/CVO technology will influence and impact those components of the infrastructure that are susceptible to increased efficiencies to a broad group of users.
- OTS/CVO is the use of technology to improve commercial vehicle operations on the road, safety, driving and clearance.
- The application of ITS technologies to commercial vehicle operations,
- ITS/CVO is the federal program to apply ITS to CVO.
- The program is the federal effort to improve safety and create a seamless transportation network through technology.
- The goal of the program is to allow the free flow of traffic, improve safety, build efficiencies into the program and provide full service.
- The goal of the program is to develop state-of-the-art technology for CVO that includes seamless borders, automated communications systems for clearance and improved safety for drivers.

- The purpose of the program is to filter out through the system to the field staff technology which will allow them to streamline their operations. They will be able to work with the most recent information on carriers. The technology will help them get a rating on carriers for which there is no information. ITS helps us come to grips with the carrier population.
- The program is an investment by society, by Congress in clear recognition that commercial traffic is expected to increase in the future. We can't build our way out of the problem, and we can't expect an increase in regulation and law enforcement staff to meet this growth. We are confronted by the same dilemma that led the Eisenhower administration to create the Interstate program.
- ITS /CVO is the application of automation technology to improve the efficiencies of the trucking industry.
- The ITS/CVO program is the government/industry partnership that is working to set standards and protocols that will lead to the introduction of ITS technology into CVO.
- The ITS/CVO program is putting all of the technology together to make one system that makes sense.
- The ITS/CVO program is the application of ITS technology improve motor carrier safety and regulation
- The ITS/CVO technologies- weigh-in-motion, vehicle identification, EDI, pre-clearance--create an environment where there are no boundaries. The result is an open-ended program.
- The goal of the program is to get all state systems on one inter-operable system that allows us to share information. This will make us more efficient and improve safety. We will use technology more efficiently at our desks and on the highway.
- Officially, ITS/CVO is the application of ITS to CVO regulation, enforcement and safety.
- ITS/CVO allows smart trucks to match with readable information that will allow truckers to avoid being stopped (at weigh and inspection stations).
- ITS was designed to relieve congestion on U.S. highways due to the growing number of vehicles. ITS/CVO will improve commerce by providing unrestricted flow of traffic. We're not going to build new roads; we're going to learn how to manage traffic. We have not explored the benefits (of the technology) to the bus industry compared to the trucking industry.
- ITS/CVO is finding appropriate, useable and affordable technology to enhance motor carrier safety operations and information exchange between industry and government and government to government.
- The ITS/CVO program evolved over time. In the old days the program was strictly research oriented. Now the program is getting into deployment (of technologies) and there is an effort to bring the program into the mainstream.
- Basically, the program is an effort by state and federal government to monitor trucks and individual truck drivers and to collect fees and taxes.

2. ***How is the ITS/CVO program different from past commercial vehicle operations programs and initiatives?***

- It differs in the applications of electronics that treat freight hauling as a complex system.
- There was no ITS before, no use of technology.
- There is a more cohesive group (OMC, state agencies) behind the present ITS/CVO program. Money is available for pilot programs that help industry understand that barriers can be removed.
- There is a more extensive use of public/private partnerships to deploy technology.
- FHWA is doing more across the board, taking an integrated look at CVO. More money is being put out for operational tests and institutional studies. In the past the program was much more fragmented.
- The program has a national perspective that is driven by technological opportunity. It has broad participation by government, motor carriers and end users.
- I have no idea how the program differs from past programs. There have been multiple programs in the past and present that have been conducted to various degrees.
- The program puts more focus on technological solutions to the safety and productivity challenges we face.
- The program will develop systems to remove paper requirements and make the process more efficient for states and industry and free the flow of traffic.
- I can't answer that. I don't have the background.
- This program is substantially different. There have been changes in the way business is conducted by law enforcement and it makes available information on whether a driver has a valid license.
- The past/present program tends to be hands-on, people oriented. Decisions tend to be made on the local/regional level. Electronics allows real-time information to be delivered to contiguous jurisdictions to maximize their investments.
- The difference is in the focus-adapting the practical uses of technology. I can't think of another CVO effort that equates, that concentrates the resources available to the FHWA. The combination of FHWA money and a willing industry. These are the best conditions in a long time.
- I don't know.
- This program encourages partnerships between the public and private sectors and between government entities.
- CVO in our state until the mid-1980s had no technical component. Since then, we have moved forward, built on the initial applications, added computers and deployed new technologies such as weigh-in-motion.
- The ITS/CVO program in our state has brought agencies together in a way that they have never worked together before. Each agency has a seat at the table. It's a more systematic manner of working together and looking at the program.

- In the past each program was a "stovepipe", independently run operation. Seldom, if ever, did agencies pull together. The program has given them a reason to talk about their operations together.

- This program is much more sophisticated. I hope there is a future for it because it will enhance road traffic.

- I'm not certain we're far enough into the program to say. We have no mission statement, no consensus on terms. For instance, if we go back to electronic clearance, buses are generally not stopped at weigh stations or need interstate clearance. So, this is not an issue to the bus industry. On the other hand, advanced notice of bottlenecks on the road ahead, electronic toll collection and improved communications are something the bus industry is interested in.

- On one hand, the program is a lot more technically focused than in the past. The program is focusing on carrier input during the planning process. This time around, systems are being orchestrated to be inter-operable, which has not been the case in the past.

- There are new names and nomenclature, but the same philosophies and challenges exist. Whereas in, the past you talked about controlling the timing of your traffic signals, you now talk about Advanced Traffic Management Systems. There's nothing new here. There are new people involved, new industries involved and new customers involved. There are new tools being given new applications. Some clients/customers see ITS as solutions looking for a problem. Rather than being solution driven, we ought to be problem driven.

- ITS/CVO is a vendor-driven effort to find a purpose or reason for being.

3a. What are the outreach needs of the program ?

- Deal with the fears of the trucking industry regarding hidden government agendas-weight distance tax and concern about Big Brother. Stakeholders must be shown the relationship between CVO and other transportation systems.

- Everyone involved needs to know the goals of the program. Each group needs to know how it fits into the program.

- Many states have motor carrier operations under one umbrella and tax operations under different umbrellas.

- The needs are extensive running the entire spectrum from users to stakeholders at all levels. People are ignorant about the program, suspect it and are oblivious to it. There is a very narrow group of participants who are knowledgeable.

- The trucking community-including for hire and private small fleets-need to know what ITS can do for them. There is a need for more information on one-stop shopping and how computers will help truckers save time and money and make their operations more efficient. Also, state government has to know that programs like CVISN will help them save money.

- The quantitative and qualitative benefits that accrue must be conveyed to government regulators and motor carriers.

- We are not currently supporting FHWA on its ITS program. We have no agreement. We are supportive of ITS, but we are not clear what the federal program is and what is its product.

- The needs are tremendous. Outreach more than implies just public relations. It includes training, awareness and building organizational understanding of what we're doing.

- Industry does not trust the program. They look at it with questions. They perceive the technology as a means to install a weight distance tax. They don't want to pay another fee for a service they feel the state should be providing for them. They will pay funds or fees up front for the service. In time, industry will see the efficiencies of the technology.

- The program must try to reach targeted audiences such as enforcement, regulation, truckers, ATA through the FHWA.

- Common sense education about the program is needed.

- The needs are to the trucking industry, government and the public. There is a deep absence of understanding about what are the benefits of an ITS program. There are pockets of understanding within government, but truckers must be shown the benefits of the program through experience.

- Adequately share the technology information with all commercial vehicle operators who would benefit from it. The technology becomes more useful as more entities use it. The information must be shared with internal audiences (we are still some ways away from technology standards) and external audiences (ITS will save industry money and time).

- You need to get to groups such as CVSA.

- Demonstrate the benefits of ITS applications.

- Significant. There is a lack of industry participation. We need to get them full-blown to the table.

- More needs to be done with state government groups, county groups, local government, law enforcement, industry and quasi-government groups.

- It must be explained to the CVO community what changes the program is bringing out and what they mean. There is a cadre of people who understand pieces of the program but they need to know how the pieces are linked. The message has to be expanded down and broadly into agencies that do not have much knowledge about what is going on. There needs to be some sort of scorecard that lets everyone know what is going on in the program. At a second level, legislators who control the money need to know what the program is all about. There is a complicated set of programs whose message has to be boiled down into a five minute presentation for legislators.

- They need to control costs due to small or limited funds.

- Within our industry, there is little understanding of ITS and what it is supposed to do among owners and drivers. We are a very fragmented industry. There is a very clear need to explain the benefits to owners.

- The program's priorities need to be conveyed to industry, other agencies and vendors.

- The needs are at U.S. DOT, Treasury, the IRS, Customs. Each of these departments pursues their own agenda without keeping each other informed. There is a need for more outreach resources. There's lots of ignorance out there.

- The program must be presented to a much broader section of the truck operator or businesses that use trucks. There are no applications that make any economic sense. It's activity without accomplishment.

3b. What has been done to date?

- The work of ITS America's CVO subcommittee has been instrumental, as has publicity surrounding the Advantage I-75 project and Help, Inc.
- FHWA and CVSA outreach forums with drivers and inspectors have been effective. Articles in trade magazines have helped spread the word.
- Advantage I-75, Help, Inc. and the ITS America newsletter do a nice job.
- There have been attempts at pieces of an uncoordinated message that has been fundamentally ineffectual.
- What has been done to date includes institutional issues studies, I-9.5 Corridor Coalition studies, truck desks, Advantage I-75, Pre-Pass, satellite tracking tests and border crossing tests have helped get the word out.
- Public outreach to date has been haphazard and project based.
- Focus groups, planning, courses for employees, round-table discussions with journalists, ribbon cuttings.
- Our state has been holding meetings with truckers. Three states in our region plan to hold meetings on developing one pass.
- Many of the parties involved have already been reached. The opportunities are there to reach them:
- About one-half to two-thirds of the members of our organization have knowledge about what ITS is.
- Some jurisdictions have been involved in outreach-the corridors, HELP, Inc., Advantage I-75-because they are involved.
- The structure of the outreach process has been established. Pilot programs are in place. A great deal of planning for future uses of the technology and how it will help the carriers is being done.
- Focus groups. You need to reach out to law enforcement and regulatory agencies.
- There have been a substantial number of demonstration projects and operational tests.
- The federal government has held focus groups. Our state has carried forward our work. ITS World and the other ITS publications and international press have published articles.
- There have been lots of project and initiative-specific briefings, mostly to people who are involved in the project. There have been modest efforts to reach people outside the project circle, but it's a matter of too little not quite too late.
- In Utah and California there are programs and a number of larger trucking companies.

- We're keeping our members informed about what is going on about such things as smart cards and pre-clearance. Things like smart cards with commercial drivers license applications and toll information on transponders are of the most interest to the bus industry.
- The work of the ITS/CVO subcommittee under Gene Bergoffen has made great strides toward getting the word out. The standards subcommittee has made strides as well. They have been the models of getting the word out.
- The agencies at U.S. DOT speak to themselves a lot, but little has been done. More needs to be done with motor carriers. Problems and solutions need to match.
- There have been pilot programs with states to interest them in ITS technology. States are always interested in programs when you tell them they will get dollars. We don't know about ITS programs that go beyond specific groups such as the general efforts regarding urban areas.

3c. Does more need to be done?

- Freight hauling is basically rural, while the focus of ITS has been upon urban problems. There must be a greater linkage to the rest of the ITS program.
- The basic concepts of the program are not understood by stakeholders. There are things that government doesn't know, and the program is moving very quickly. These must be communicated.
- Yes (6 responses).
- Yes, small truckers need to know what is going on.
- Outreach must be targeted and the content based on real benefits to those target communities.
- Zeborah English and Wilber Thomas have been holding meetings, but there has been little participation from industry; they have little interest in attending meetings. Outreach has to be internal through DMVs or motor carrier associations.
- Not a whole lot more needs to be done. The major parties are interested. Closed minded parties have made up their minds about the program.
- You can inform people through breakout groups, pilot programs, etc. Pilot programs will bring the issues home to the roadside officer.
- Hands-on things like demonstration panels are needed. Industry doesn't like to sit through meetings and because truckers have to work' events have to be scheduled at times that are convenient to truckers and not just bureaucrats. Rather than scheduling meetings to begin first thing in the morning and running through the day, why not start an event over a lunch and then provide a box lunch in the evening and let the meeting run until about 8:00 p.m. or so. Truckers would most likely appreciate the chance to spend the morning in their office before heading out to an event.
- There's question about it. The responsibility falls to the participating members themselves to get the word out. There is promise in the technology.
- More effort needs to be made to reach the drivers, fleet managers and company owners of 5-6 truck fleets.

- Absolutely. If ITS is ever to grow, we have to dump the image of corporate welfare. Also, the public has to be informed.
- More outreach needs to be done to industry. The system needs to accommodate safety needs, customer needs. There needs to be industry input in the design of the system and the development of the data base.
- Yes, absolutely. Many companies don't know about or understand the program.
- FHWA has been doing a pretty good job of keeping us informed. They need to try to get the information to carriers who not members of trade associations. This can be done through a mass mailing that could explain the future of highways under ITS.
- Absolutely. Efforts out there need to be continued.
- There is a need for outreach. Specifically, is this program needed or wanted, and if so, are you willing to pay for it with tax funds?

4a. What do you see as the federal role in communications and outreach?

- Catalyst.
- The federal role is to make sure the program meets the concept of what Congress and FHWA expect. We must have a clear understanding or what their expectations are. Every methodology available should be used to get the word out.
- The federal government should assist with financial resources. Research on issues such as size, weight and dimensions are better handled at the federal level.
- The federal role is to provide leadership in facilitation of the technology and dollars.
- The federal role is to provide funds to the states for programs, to get programs up and running and to let the public know what is being done.
- The federal role is to make sure that communications and outreach happens, not do it necessarily, but ensure that it happens.
- The federal role is to provide information to state and local government and trucking associations.
- We would like to see a more aggressive program if we agree with it.
- The federal role must have a concrete message that encourages outreach efforts.
- The federal government should help the states promote the program.
- The federal government should coordinate outreach efforts to make sure that a standard concept is sold.
- The federal government should fund and establish pilot programs to show what can be done so that the program will take off on its own. The federal government should serve as a catalyst and coordinator of efforts. The market forces must be different. The federal government must provide the common denominator. There must be a core program that is open to creative approaches. It is hard to keep up with all of the programs **that** are underway. Take the best of what can be demonstrated and use that to get buy-in.

- The federal role is to shepherd the business of inter-operability, to set national standards. Firms are now buying the technology. How do we keep from voiding their investment?

- Before communications and outreach can be done, federal government must provide the under riding seeding for the program. Only the federal government can mandate uniform technology standards. There's a major disaster brewing if you have numerous technology standards around the country.

- Cash, cash, cash. Keep doing what you have been doing-focus groups, creating outreach materials. The perception of drivers toward the government need to be changed.

- The federal role is to develop partnerships with the private sector to demonstrate the technologies to state/regional/local entities.

- Establish a comprehensive outreach program or the modular approach-bring on staff or staff people on loan from the states-to truckers down to the local level. There is a gap between the federal and state officials and local officials understanding of ITS.

- The federal government can help with funding, bringing the states and other groups together, setting national standards and promoting the need to move toward ITS/CVO.

- The federal government needs to take the lead, be involved in support to the states, provide funding.

- The core need is for the federal government to build a coherent and cohesive vision of its program and to explain it to the states. There is no single place for anyone to look at to get an idea about what the program is about.

- The key to the program is how it is tied into the National Highway System. We are not certain FHWA is doing all that it can do. The FHWA should take the lead in promoting ITS. Right now, there are too many chefs with too many agendas. They take that role by stepping in when there is a logjam.

- The federal government needs to be the leader by facilitating development through incentives to keep everyone interested.

- FHWA has to reach out to its own regional offices to make sure that they have uniform information and are executing their tasks. There needs to be outreach to other federal agencies. There is no strategic outreach program with no planning on who will participate in outreach. FHWA has to educate its own staff. Follow-up is important. Mainstreaming is the strategic direction FHWA's own field staff haven't heard of the mainstreaming plan.

- Focus groups. These are the communications vehicle for the general public and interest groups. If the federal government is involved in outreach, it should be on the national level rather than the regional level. It is not uncommon for federal initiatives at the state level to work at cross purposes. There is no cohesion to the program.

4b. Are there outreach needs that the federal government can't provide?

- Individual business development should be left to companies.

- It is not appropriate for government to do everything. Government can't speak to truckers. An industry person needs to talk to truckers. The perception is that government is the voice of authority. People want to hear from their peers.

- States are best at communicating ITS/CVO issues to their own state-based motor carriers.
- Outreach should be done on the local level.
- The states need an ITS champion in CVO and other user services.
- Federal government has problems in outreach with motor carriers.
- States are better equipped to speak to local trucking associations.
- It depends on what the government has to say or to sell.
- Government can't provide all outreach resources.
- Motor carriers have problems with federal government programs.
- You can't tell everyone everything. You can't reach those who won't be reached.
- No. The federal government can be helpful in all areas, to all audiences.
- Yes, the federal government provides the total package of outreach. The federal government can't get the governors to do much without providing a super carrot. Outreach must get down to the city/county level.
- Federal government can't speak to the individual members of trade associations. They will turn to and listen to their trade group first. For instance, government can't mandate articles in trade association newsletters.
- There is no one who can't be reached if the government puts resources into the effort.
- You can't tell motor carriers/states what the commitment of the private sector is going to be to the program.
- Yes, I think there are some needs. The federal government has a high level of overview but can't provide state-level information or answers.
- At the macro level they can help. At the micro level, states are better suited to outreach.
- Yes. The federal government can't talk to carriers. The FHWA can't talk to state police agencies, revenue collectors and legislatures. The FHWA has technical specialists in its regional offices who are not the right people to be talking to these state officials.
- The federal government needs to standardize programs, technology.
- I have no specific complaints about federal outreach efforts. They should try more direct contact with motor carriers about ITS. There should be no message about ITS as an enforcement tool. That rumor needs to be stepped on.
- Each state has the responsibility to get its house in order and come to the table with a common state vision. The same is true for the motor carrier industry and vendors.
- Using contractors and consultants, the federal government can reach any office. FHWA is not equipped to fulfill this function but does have money for it.
- I'm sure that there are needs the federal government can't meet. I'm skeptical that the federal government can objectively interest the general public in the program. The only ones excited about the program right now are the vendors.

4c. If so, what are those needs?

- There is a great disparity between companies and their CVO applications of technology. Also, there is a need for outreach with the Teamsters Union
- Every participant has a piece of the action. It is important that CVSA be involved in getting the word out, as well as FHWA, law enforcement and the states.
- State personnel must be trained for outreach to the carriers in their state.
- Across the spectrum, communication should target the user and customers. You have to find those who can communicate to your audience. You have to do a lot of convincing and selling.
- There are perception and awareness problems at the state level down to the local community.
- The scope of outreach work that is needed is beyond government's resources and abilities. We need a cohesive communications effort from all partners.
- There needs to be a partnership with the states to develop the message and deliver it.
- There needs to be central distribution of information.
- The federal government has no devices for notification or discussion on a one-to-one basis.
- FHWA/OMC needs to develop a coherent description of the program and find someone (consultants) to sell the idea to the states.
- State trucking associations must get with groups like the ATA to make the technology affordable and realistic.
- Everybody has to do their share.
- A cross section of America talking to their peers.

4d. Who can provide what is needed?

- Government, private industry and supporting consultants.
- State agencies and association personnel.
- Industry' the National Private Truck Council, larger firms, state trucking associations and ATA all must do their part.
- ITS America.
- Vendors can speak to motor carriers. They need to be people that the carriers have faith in and can return to if they have questions or concerns.
- State agencies such as DMVs, DOTs, tax and revenue agencies must get involved in spreading the word.
- Trade associations. The government must support individual believers/users because a lot of important "stuff' takes place on a one-to-one basis.
- Organizations like ITS America. Carriers can speak to other carriers to get them onboard. It has to be someone the truckers trust.

- Partnerships of federal government/private sector. There is no cohesive voice coming from the state and regional levels saying we're ready to do this.
- Partnerships are needed that bring the federal government, states and vendors to explain the program and products to industry and local officials.
- It's a joint effort. The federal government carries the ball at the policy level and the states fill in the details.

5. What are the important issues or information that must be communicated?

- We must be much more specific about the elements and benefits of ITS.
- We need to start at the top. What is the program going to accomplish, how will it do it, how much will it cost, and who will pay for it?
- The program will create a free flow of traffic for commercial vehicles. There is some misconception that we are trying to capture incriminating information to be used against truckers. This is not a tax issue.
- Technology is a tool. Technology can improve our quality of life. Technology should be a value-add. Government has to get out of the way of public/private partnerships. We should promote a win/win/win (govt./industry/consumers) scenario.
- We should promote the big picture-safety programs; increased efficiency that will save government money, help it collect taxes and tolls and do more with less.
- Everyone must see technology as beneficial. Information has to focus on benefits, whether it is saving money and lives or adding capacity to our roads in the future.
- There is not a need for communications and outreach at this time. We want the whole program negotiated before anything is presented to the public. It is premature to talk with industry about ITS. We must work together to create a delivery system. Outreach is the problem of the programmatic approach.
- We must communicate the vision of what we are trying to do and what are the efforts to move us in that direction.
- Emphasize the efficiencies. We must have a fundamentally basic program first. The fast track of information that is being produced is mind-boggling to industry. Start simple and then build on new systems or functions as the situation dictates. We want to expand too fast before we have an operational system in place.
- We must communicate the benefits to the public and private sectors.
- We must make clear what the federal role is. This is not a mandated federal program. The federal government will not own or manage the system. It will be a shared, managed program with the private sector.
- It depends on the audience. We need to tell people-get off the dime or we will lose the momentum in Congress that we have built. We need to know who our friends in Congress are and who oppose the program. There is a need for federal presentations before elected officials' organizations such as the NGA to get the message out.

- Cost savings. CV operators always look first at cost savings. We need to broaden the understanding of how the technology will be useful in the future-how it will help save time and money.
- What are the benefits and what the technologies can do. It must be driven home that this is a voluntary program.
- The early message of the ITS program is "gee whiz, let's deploy this technology." The message needs to be "you need this technology" followed by an explanation why. The states need to be shown why this is better than what they now have.
- What the grand plan is, how it will be implemented, what services/products will the private sector get out of the program and the quality of life benefits.
- This program represents the re-engineering of how government conducts its business. It is changing interagency relationships. The benefits that should be communicated are improved operating efficiencies, improved safety and improved ability to handle increased work loads.
- The core issue is that there will be a great investment in automation and networking capabilities. This will enable you and propel you to change the way you do business. The way you deliver freight will change.
- It must be shown where the cost of purchasing the equipment will lead to benefits for the carrier. For small carriers, the bottom line will be the savings they will be able to realize.
- It must be communicated what ITS is envisioned to be. There will be no new roads built, but traffic volumes will continue to grow. There is a need for high-tech traffic management. Is the program voluntary or is it another unfunded mandate that will require you purchase more equipment. The revolution is going to happen. The question is can it come smoothly.
- The success of the program is predicated on the technology improving conditions over what presently exists.
- FHWA needs to tell its own field staff what the program is.
- The costs versus payback need to be communicated.

6. What, if anything, has to be resolved for the program to really take off?

- We must portray benefits in a way that fuels the marketplace. There must be a continuity to federal funding as seed money.
- Parts of the program are taking off already. CVISN is ready to go. We can't sit on the sidelines waiting for the program to go. It's already going on Advantage I-75' HELP, Inc., PrePass. You build on that.
- The federal government must look at the discrepancies in standards on equipment and try to come up with a uniform standard. Not all equipment acts in the same way.
- The government role must be resolved. Technology is deployed on a value-added basis. We must prevent the misuse and abuse of the technology.
- The different programs need to be tied together in a consistent way at the federal level. We need to set goals and "get one master plan."

- There is a reluctance by truckers to participate because of the perception of Big Brother. The voluntary nature of the program must be explained.
- Provide safety and productivity improvements through safe equipment on the vehicles and better productivity through electronic clearance.
- There are better ways to do business. The old ways must go by the wayside. We need more performance-based.
- Technological standards have to be worked out. There are a lot of bugs still. Proprietary concerns by industry must be addressed.
- We have moved to a new program that is performance-based. We must be able to accurately reflect a carrier's history and its violations. New systems must reflect all current information on a carrier.
- Most carriers have said the status quo is great. I agree. It's going to be awhile before the program really takes off.
- Technology standards must be resolved. For carriers to invest in the technology, it must be backwards compatible.
- There must be trust between truckers and regulators and a willingness to listen on both sides.
- Cost/benefits must be spelled out for truckers and states. The states are asking these questions. The benefits are the key to the whole program.
- Who will fund the program. Standards must be set because defacto standards are being developed. ITS must be more connected to the mainstream. What is going on in Asia and Europe and how are all these initiatives being tied together.
- There needs to be an emphasis on interoperability of systems across states lines. We have to move from the concept stage to reality. People need to be educated about the benefits of the program.
- The OMC needs a strategic plan that states its goals and vision and then this document needs to be widely distributed.
- A lot more information that shows what the benefits of the program are has to be made available to a wide audience.
- Users must be convinced that the technology is credible and will provide them with bottom line benefits. If it can be shown where the technology will hit the bottom line, then that is where the program will take off. The technology is proven and efficient. There is a lot of mistrust of the system, that computers will someday run everyone's life. You have to show that the bugs have been worked out of the technology. Pay a little more to make a little more. No benefits, no sale.
- There has to be an agreement on overall policy and guiding principles. We need to know what we want to see and gain.
- The constitutional issues of government monitoring private citizens need to be addressed. Can costs/benefits be justified?

7. What is needed for you or your agency to adopt ITS/CVO technology or to adopt it more quickly?

- Because our members own their own equipment, the program and the technology must be available now. We must have a program that's doable and will provide benefits. Some of our people are interested in electronic clearance, others in electronic credentials and still others in electronic toll collection. They need something to latch onto.
- Financial resources, a mix of federal and state moneys.
- There must be sincere recognition of public/private partnerships as viable deployment tools. There must be rational investment programs. There must be widespread outreach across the audience spectrum.
- Standardization of technology from toll tags to transponders.
- We need to educate ourselves and build expertise through training.
- Technologies must be compatible.
- There must be buy-in by the CVO community. We need to work through the concerns of participants, elected officials and the appropriating committees that will decide the future of the program.
- We need an operational working program for truckers to buy into the program. I would urge them to join HELP, Inc., for instance. If the trust of the industry had been secured first, the product would have been much different.
- The key issues are who pays for the program and standardization.
- For states to invest in infrastructure and equipment, their investment must be cost effective. The equipment must be standardized, so that states can spend their time and resources dealing with information and not chasing down the latest piece of equipment.
- Operational corridors must be in place. We haven't come to grips with the interoperability issue yet. Someone has to force the decision. If we don't, we're going to wind up with numerous data bases. When the federal money is taken out of the program, how do we sustain operations? The private sector is going to have to pick it up from there. Whatever encourages government/private sector to adopt the technology is worthwhile.
- If the state is not involved in the program, then cost becomes a major factor. We just don't have the money for the program. If someone like HELP' Inc., could go in and provide help then the program might work. If the federal government would provide a hard match to get the system implemented.
- Standardization of technology is the problem holding everyone up. States and industry have problems spending money on equipment that is not standardized.
- The value relating to cost effectiveness has not yet been demonstrated to industry. It has not yet been shown that ITS is a long-term technology. Carriers have to make their investment decisions based on economics. At this point' for some carriers, ITS is a necessity, for others it is a frill.
- The states need to see economic feasibility, safety enhancements and the improvement in the delivery of services to accept the technology.

- Funding. We are going full speed ahead with deployment as it is.
- What would help the most is if there were a more centralized group of people who would handle CVO policy, a centralized designated office that would handle day-to-day responsibilities.
- What is of great advantage to us–the carriers are running legal, safety mandates.
- That question is best posed to manufacturers. Owners (of bus fleets) will take any equipment they are given. Therefore, implementation of technology won't be difficult. It may take more time for drivers to accept the technology. Outreach sessions would be helpful. The technology is not complicated, does not require hands-on tinkering. It's hands-off technology. Since most fleets use computerized systems, it's just a matter of office staff being trained in the new systems.
- Interoperability standards and some idea of the benefits.
- I don't know that there is a need or urgency for us to embrace the technology more quickly or at all.

8a. Are the right people involved in formulating the program?

- I hope so.
- Yes, they are.
- Yes
- Yes.
- Yes.
- Yes. The ITS America subcommittees provide a good forum for input.
- At the state level, it depends upon the structure of who is involved with the program.
- No reason to think not.
- Yes, although there needs to be heavier industry involvement. Also, the enforcement community thinks that the technology "is going to take my job."
- Yes and no. When the federal government/Congress created the MCSAP, each governor was told, "for your state to participate and receive its funds, you must identify a lead agency for administering the program." People and agencies were forced to sit down and talk that may have never done so in the past.
- I think so.
- Yes, assuming ATA is there.
- Yes, with reservations.
- At the state level yes. There need to be firmer points of contact at FHWA.
- Yes. It took some time but we are very close to having everyone at the table.
- Generally, yes, although there's going to have to be political involvement at the policy level.

- Yes, there are a number of people who are knowledgeable involved.
- I would think from the amount of discussion at our subcommittee meetings that we have a good mix at the table. I am concerned about the greater enforcement potential that the technology suggests. It has to be made clear that the technology will not be used to target carriers. Technology should identify good carriers and highlight unsafe/questionable carriers.
- Generally, yes. The effort has been made to get the right folks involved.
- No. There's not enough industry participation.
- End users, beneficiaries or targets (of enforcement) are not involved enough.

8b. Is anyone missing from the table?

- There is no union representation.
- Shippers.
- The customer/user is not thoroughly involved.
- No.
- There is a slight under-representation by motor carrier industry. There is an over-representation of vendors and an under-representation by those who will use the products. All truckers work for a living, so it is hard for them to send personnel to meetings. Government employees and educators have nothing else to do but meet.
- Everyone has a voice at the table. Whether they take the time and effort is a different story.
- Industry has to be brought in first. Legislators have to be involved as well. Participation has to go beyond the lead agency.
- No.
- No, but we need more industry at the table.
- CVSA, which represents the law enforcement community, has not been at the table. There have not been many state regulators at the table. They have not been part of the discussions. Many states have assumed the position that they are more concerned in preserving their states rights options.
- The credentialing, revenue folks-the folks who receive all the paperwork-are not at the table. They could be good cheerleaders if they were involved.
- Traditionally, government entities who will implement the technology and provide the services, such as motor vehicle registration, revenue, legislatures, law enforcement and policy makers at the state level have not been involved in the discussion
- Depends on the level you're talking about. How many members of industry are out there who might be involved.
- Work needs to be done on getting more senior level policy makers involved.
- Not really. It would be helpful to have FHWA senior-level policy management at the table.

- You can never have enough knowledgeable people involved. More high tech industry involvement would be welcome.
- I don't see any bus or truck firm owners at the table. We don't run motor carriers on a day-to-day basis, so we don't know what their concerns are. They could see new issues that the rest of us are missing.
- I can't think of anyone in specific.
- Industry.

8c. What will it take to get them to the table?

- Ask them, and they will be there.
- Recognition of shared responsibilities and benefits by government partners.
- Users must see the benefits. Truckers will come to the table if government says it is going to do it (provide the benefits).
- You have to find the trigger to bring everyone together.
- We need to talk to the carriers about the bottom line advantage of deployment. We must convince the states and industry that technology will not hurt them.
- The best way to get these groups to the table is to invite them and give them a meaningful role. To date there has been a great concentration on policy and process rather than outreach.
- The agencies don't have funds to attend meetings.
- They have to be invited. Outreach must be performed to gain their attention. The question is how much political capital are the governors willing to risk with their legislatures on this issue.
- Incentives such as free program participation-"try it before you buy it". Program won't work without industry support. Get them into the program and they will get involved.
- They need to be invited and made a part of the process.
- They must be invited by someone with a strong strategic vision.
- Money is the major factor to gain high-tech industry involvement. Industry needs to see the benefits.
- An invitation Give them an idea of what we are doing. One suggestion is for the FHWA to conduct listening sessions with local owners and ask them, "Are we on the right path or wrong path?" We need more owner input.
- You have to go where your participants are. The program needs to be more widespread.
- To get these groups involved there would have to be a commitment that government would honor that the system would not be used to unfairly target or tax this group or monitor private citizens.

9a. Who are the key influences to state government?

- Motor carriers-American Trucking Associations (ATA), National Private Truck Council (NPTC)
- The federal government-they know everything about the program and they are the ones who deal the cards.
- Federal officials who make money available.
- State secretaries of transportation, governors' the National Governors Association (NGA).
- The federal government because it doles out money and industry because it employs people.
- Governors.
- Every state has a champion for its program.
- Citizens of the state, industries in the state, other state government entities.
- Mid-level managers in member agencies "because they know the situation in the field and they can sell their supervisors on the program and implement it."
- Lobbyists.
- Money, the states right to refuse to participate.
- ATA The Norm Minetas of the world make a difference.
- Industry.
- Legislatures, funding, local issues, FHWA, industry.
- Follow the flow of federal money. Public Utility Commissions, state police.
- Staff, industry, state legislature.
- DMVs, state police, revenue collecting agencies, the governor's staff on economic and development issues.
- Lobbyists.
- The highest executive levels in state government, the governor' industry, the federal government.
- The state's chief executive officer-the governor, DOT directors.
- Citizens of the state.

9b. Congress?

- Federal government-NHTSA.
- Congressional staff, especially those who delve into the different aspects of the issue.
- Industry.
- Users.

- Key staffers on the appropriations committees.
- The administration, bureaucrats, constituents in the home district, industry segments.
- Constituency.
- Lobbyists.
- Constituencies, same groups as above.
- Industry-ATA, NPTC, CVSA.
- Lobbyists.
- I don't know. Maybe, the constituents or someone with more horsepower. Everyone has different triggers. State legislators-we need more fans in that segment.
- Constituents, money.
- Industry, state officials.
- ITS America, FHWA, state personnel.
- Trade associations, legislative affairs staffs for government agencies, the National Governors Association.
- Industry groups.
- Paul Rothberg. Their broader constituency.
- Trade associations, lobbyists.
- Legislators, industry (CVO and ITS industries).
- Citizens of the country should be but not always.

9c. The media?

- Insurance companies.
- Everyone tries to. FHWA. The trade media are doing the most with the story right now. Although this area is a great source of story ideas, reporters like to report on tragedies. We need to focus on the benefits.
- The trade media.
- Periodicals to the CVO community, Big 3 television networks, CNN.
- General public.
- FHWA because it has the resources, states.
- The media--"themselves."
- ATA.
- Readership/consumers.
- Local celebrities who are in the media eye everyday.

- Money.
- Yes/no-the general media won't cover the story. The trade press has begun to show interest, but what is their impact?
- Industry.
- ATA and big trade associations.
- Those who can generate hysteria and make a story out of nothing. The media isn't interested in the day-to-day workings of government. Advocacy groups, governors, legislatures, cabinet secretaries.
- Not much of anything. ITS America, but that organization hasn't made much of a dent.
- I don't know.
- Federal government, industry (especially ITS).
- Interest groups.

9d. Motor carriers ?

- The subset of transportation writers who cover automotive news, Society of Automotive Engineers (SAE), the trucking press.
- Shippers, manufacturers.
- Customers.
- Associations such as the ATA or NPTC, periodicals.
- Customers, regulatory agencies.
- General public, Congress, government, drivers, the economy.
- State agencies working with industry.
- Stockholders, government entities that oversee their operations.
- Customers and shippers.
- Customers, government, the unions.
- Their accountants. Other motor carriers.
- Customers.
- Their customers.
- Customers, shippers.
- Trade associations, regulators/law enforcement.
- The bottom line.
- Industry associations, ATA, NPTC, suppliers of communications services and equipment (Ardis, Ram, Qualcomm).

- Insurance companies, trade associations.
- ATA, NPTC, state trucking association chapters.
- The bottom line.
- Government, shippers.

9e. Regulators?

- ATA, NPTC, manufacturers such as Ford, GM, Freightliner.
- Bureaucratic leaders.
- CVSA.
- Legislative bodies, especially those that regulate the industry and administrative agencies.
- Congress, industry.
- The lead agency, legislators.
- Business, legislatures, FHWA.
- Motor carrier industry, shippers and their associations.
- Industry, those who pass the regulations.
- Politicians
- Their bosses, agency quota systems.
- Policymakers.
- FHWA, industry, legislatures.
- Congress, citizens.
- Industry, advocacy groups, legislatures.
- CVSA, AAMVA, NGA.
- Insurance companies, motor carriers.
- The federal government.
- Superiors, motor carriers.
- Interest groups, lawmakers.

9f. Law enforcement?

- ATA, NPTC, manufacturers such as Ford, GM, Freightliner.
- Citizens/consumers.
- CVSA.
- Legislatures.

- FHWA, Congress.
- Lead agency because every state is different.
- Legislature, regulators including FHWA.
- Members of industry.
- The public, lawmakers, judiciary.
- "They look sideways at God." State legislators. In reality, law'enforcement doesn'twant to be influenced by anybody.
- Their bosses.
- Themselves.
- FHWA, industry, legislatures.
- State legislators, federal government.
- Unsafe operators.
- CVSA, MCSAP money.
- Insurance companies.
- Motor carrier safety program at OMC, CVSA.
- Superiors, motor carriers.
- Government, insurance groups and others who generate revenue.

P0. Name three champions who could be helpful in selling the program nationally.

- ATA; Bjom Klingenberg of Freightliner; Doug McKelvey of FHWA/OMC.
- Truck drivers; law enforcement who understand the technology; lower level management at the state level-not top executives-because they have the time to devote to the program.
- Rodney Slater of FHWA; Tom Donohue of ATA; Cal Grayson/Don Hartman of the Kentucky Transportation Research Center.
- There are no grand champions.
- ATA, NPTC; AAA.
- Christine Johnson, Federico Pena Rodney Slater of U.S. DOT; Gene Bergoffen of the NPTC; large motor carriers such as UPS; leadership states such as those involved in Advantage I-75.
- Lance Grenzebach of Cambridge Systematics; Johns Hopkins Applied Physics Lab.
- I don't know. It has to be a person who is sincere. There are a lot of people out there you can hire, but the job calls for someone who believes in what he is doing.
- ATA; National Governors Association; U.S. DOT/FHWA.

- Gene Bergoffen of NPTC; Mike Winfrey of Iowa DOT; Doug McKelvey, Ken Baxter or Larry Swartzlander of FHWA/OMC.
- Tom Donohue of ATA; CVSA; AASHTO.
- I can't think of three champions. I'm not sure it's time to be pushing champions. There is no clear message yet.
- lTS America; U.S. DOT; motor carriers.
- National Governors Association; National Conference of State Legislatures; American Trucking Associations.
- Gregg Dal Ponte, Oregon DOT; Dick Landis, Help, Inc.; Secretary Federico Peiia.
- Major Raymond Cotton, Maryland State Police, Hal Kassoff-former Maryland State Highway Administrator; Tim Herder-Johns Hopkins University Applied Physics Laboratory.
- Norman Mineta, Lockheed Martin IMS; Gene Bergoffen, NPTC; ATA.
- Probably not.
- Gene Bergoffen, NPTC; Bob Pritchard, ATA Foundation; George Reagle, Joint Program Office; NGA.
- The ITS/CVO program; Tom Donohue, ATA; Don Schneider.
- I can't think of any.

lla. What are the three major problems in the way of ITS/CVO deployment?

- Firms don't see the return on their investment; fear of unnecessary regulation by the industry union resistance.
- We're still developing applications. The technology is there, but we still need to figure out what to do with it.
- Industry is concerned that certain vendors' transponders will be chosen as the standard, thus voiding their investments and forcing them to meet mandatory technological requirements. Truckers also are concerned that captured information will be used against them.
- Patchwork federal funding; there is a lack of definition of the value-added aspects of ITS technology; we're in the early stages of an immature program. "'We're still acting like kids, for the most part."
- There are institutional issues in the states that need to be worked out; standards need to be set; there need to be integrated programs.
- Start-up money, the initial capital.
- There are state highway officials who don't want to change their systems over to electronic clearance. Why change if there are no incentives?
- Institutional barriers; funding; outreach-an understanding of organizational capacity and knowledge of the program and its activities must reach a broader audience.

- The program is scattered, fragmented; there is no one program direction.
- Funding; standardization; institutional barriers that include proprietary information concerns.
- Education; funding.
- Money; interoperability; customer base must be there.
- Standardization of technology; economics reasons-we must have products that offer at least equal value to their costs.
- Programs have to fly on their own after the operational test phase is over; lack of outreach to truckers; lack of outreach to government agencies and elected officials.
- Money; institutional issues; user acceptance.
- Funding. Congress won't fund deployment. The country requires ITS. Competition requires we deploy the technology, but the states don't have money for deployment.
- Integration of systems; making sure that information collected at the roadside makes it back into the central system; the information is accurate and timely.
- Building constituencies among administrators of the agencies that will experience the value of the technology; money; bureaucratic turf wars. The thinking "we've never done it before, why don't we wait to see if it all will work."
- The cost of equipment; proof that the equipment works
- Lack of coordination between agencies at the state level; lack of coordination between states; no FHWA leadership.
- Cost/benefits; interoperability/standards.
- A lack of outreach; the morass of institutional issues; the lack of a unified industry voice. Not a lot of owners will benefit from ITS.
- Cost versus payback.
- The 7 prototype demonstrations under CVISN.

llb. Where is the resistance coming from?

- There is resistance at the state level-the money aspects worry them.
- States are concerned that replacement costs for damaged technology will be excessive. States are concerned about the budgetary impact of adopting the technology.
- There are users out there who misunderstand the benefits of the technology and are misinformed; National policies on funding and program direction are unclear; we're in the development stage of the program.
- There are trucking firms that don't understand the technology; some states are unwilling to consolidate activities for fear of job loss; the law enforcement community must come to understand that the technology will help them go after the bad guys.
- There is a resistance by regulators to use the new technology.

- The motor carriers see ITS technology as a means to assess and collect weight/distance taxes.
- There is no resistance per se, only cautiousness.
- The industry has certain fears of the program.
- There is no great resistance.
- There is no resistance to deployment, although ITS has not been a high priority in the appropriating committees in Congress. Congress will have to make ITS an issue by the time ISTEA is ready for re-authorization.
- Government; industry; Congress.
- Motor carriers that have been burned by greedy local/state government; there are no standards yet; there is no active interest by industry because the real value of the technology has not been clearly shown.
- All of the above. It's tough to budget for ITS if you need roads. Regulators want face-to-face contact with truckers. Government just doesn't know much about the program.
- Users/industry.
- There is no resistance to the program except peoples' inherent resistance to change.
- cost.
- Embedded bureaucracies working without money and resources driven by the survival instinct.
- Small operators who make up a large portion of the industry.
- Resistance is coming from the CVO community based on their belief that they are going to be handed the bill for the whole program. There is also concern that the program will be used as an enforcement tool.
- Resistance is coming from the ITS community regarding adoption of standards. Greater participation from small carriers. The federal government has been slow in developing a common vision especially on the state level.
- Inertia from industry. There is no mandate from state agencies.
- The resistance is coming from our association and our people. We don't see the benefits that will offset the cost or meet a need.

11c. What can be done?

- Outreach must be outbound to inform all audiences; listen to feedback from customers.
- The federal government has to be more reassuring that the states "won't be hung out to dry."
- More training and education is needed.
- There needs to be better-focused, better prepared information. There needs to be better explanation of where we are going. More time needs to pass for users to gain more experience with the technology and for user case studies to be performed.

- Provide start-up funds or some form of carrot.
- Get operational programs on-line, at first for free to encourage users but later adopt a user fee.
- All sides are talking at this time. Someone will have to set standards at the federal level.
- Industry/government must do more outreach; Congress needs to see one operational corridor that shows how the technology works; industry needs to voice its support to Congress.
- In such a scenario, a mandated minimal participation by all carriers would work best. Start with a small program that has a uniform standard for all carriers. For this to work you would have to begin with the manufacturers, with say putting transponders in every truck coming off the line. This would serve as the foundation for active use.
- That's the big question.
- You have to demonstrate the benefits while assuring industry of the economic benefits and this does not mean increased regulation
- Outreach. You have to let people know what ITS is.
- Create state working groups. There are a lot of pieces out there. The three legs that are needed are a mandate to do it, state/federal support and organizational capabilities. You have to pull together state agency people with their private sector working partners and figure out how to work together to get the job done.
- Information must be gotten out to small carriers about the benefits of the program.
- Lay out the facts-what will the program do? Don't target one industry. Motor carriers are not causing congestion. Emphasize the voluntary nature of the program.
- ITS communications technology manufacturers need to stop standing alone.
- Someone from an organization like AASHTO has to be brought in to promote ITS among chief administrators.
- Leave it to the private sector. They will buy those products and services that make sense.

12. ***Name three products/projects that are ready to be promoted nationally to help advance the program.***

- The 7 prototype demonstrations under CVISN; firms that have adopted the technology such as JB Hunt, UPS.
- The eyes of the nation need to be on the CVISN Virginia/Maryland prototype. We need to start talking about what these demonstrations are going to do.
- Advantage I-75; Caltrans; I-65 project in Kentucky.
- HELP, Inc.?PrePass.
- Advantage I-75; EZ-Pass toll collection; PrePass.
- Transponder technology; Advantage I-75, electronic clearance; communications technologies that allow data trading, ED1 standards.

- Brake testing devices at the roadside; the 200 MCSAP laptops computers; CVISN.
- There is no clear standard or direction to the program yet. The pen-based MCSAP program is working well because you don't have to enter standards.
- Clearinghouses such as IRP; the communications infrastructure on the Internet for registration.
- The CVISN prototype.
- Greenlight; the Hughes/Delco transponder; EDI.
- Toll readers; weigh-in-motion such as the HELP, Inc. that can go on to become a toll system.
- Electronic clearance; on-board computer systems; one-stop shopping.
- Help, Inc.; Advantage I-75.
- Greenlight; Help, Inc.; Advantage I-75.
- CVISN prototype; portable computers at the roadside; electronic data interchange.
- Help, Inc.; in the next two years, the CVIS program; MCSAP program; Truckdesk program that provides advanced traveler information services (ATIS) for carriers; CVISN; one-stop shopping.
- No.
- There is nothing out there that promotes the bus industry program. There are no applications for the bus industry. Of the programs out there, I like Help, Inc. the best.
- Advantage I-75; Help, Inc.; I-95 Corridor Coalition. All of these programs are good. Each region has to find what works for it and fine tune their program.
- Automated Mileage and State Line Crossing Operational Test (AMSCOT)-on board computers that use GPS to calculate state by state mileage. It's a Rockwell product, but Qualcomm, RoadMaster have similar products; Help, Inc.

13. Can any one constituency kill the program by not supporting it or actively opposing it? If *so, which constituency(ies)?*

- The unions and the environmental community.
- I hope not. I don't think you can kill it, but you could slow it down. Congress could kill it. There are pockets of resistance within any niche of the CVO community.
- The trucking industry if the program becomes mandatory. The states if the burden on budgets and resources becomes too great and there is no recovery of investment.
- No, the train has left the station. It can be slowed down or its track can be switched, but no one can stop it.
- With the ATA coming around, no one can kill the program.
- The motor carriers.

- No, the ITS program will save industry money through productivity and safety gains. Industry will adopt the technology anyway without the program.
- The trucking industry could do big damage' mortally wound but not kill, the program if truckers decide to oppose it.
- No, there's too much potential in the program.
- Yes, any single constituency could kill the program.
- Probably not. Industry could have killed the program a few years ago, but no one can kill it today. The program is only as strong as the money/education put into it.
- If the ATA walked out, that would kill the program. The trade publications would pick it up and run with it. Deployment at that point would be on a carrier-by-carrier basis in the future.
- I don't think so. If the issue of using the technology falls into the way business is conducted among the carrier community, then it won't matter much whether the program is mandatory or voluntary for the program to work. No one group is big enough to bring the process to a halt. If the technology makes sense, then industry will pick up on it. There are too many independent forces out there to allow one group to have that much power. Market forces have made the technology attractive to certain users.
- Carriers, policy makers and regulators can kill the program if they come out against it.
- Yes, motor carriers.
- The trucking industry.
- Industry.
- The military-industrial complex, the military transfer folks, will shoot themselves in the foot. They tend to look at ITS from the perspective of the "big project," or a major systems management program rather than looking for pieces of the CVO program. The ITS supply industry is still looking at the ATMS side of the world. If the truckers get lathered about weight/distance taxes, they could kill the program as well. If motor carriers are mandated to make massive investments, they will definitely kill the program.
- Small motor carriers will fight the program.
- New York, although I don't think it will kill the program. The Northeast corridor will be critical. Acceptance by the key states in the I-95 corridor will determine the fate of the program.
- The motor carrier industry.
- Congress. Also, the problems in Atlanta (during the Olympics) are going to tar the rest of us.
- We hope the users or potential users/victims of the technology can kill the program.

14. What kind of education/training is needed and for whom?

- You must stratify the actors in the program' take an inventory of what their education level is and fill in the gaps of information.

- Every group within the CVO community needs training and there needs to be a strategy for bringing them up to date. There must be a slightly different outreach strategy for each group.
- Every group in the program needs educating. This can be accomplished through such groups as CVSA, AAMVA, IFTA, AASHTO and ATA.
- Everybody needs educating on all aspects of the program.
- Education needs to reach drivers, fleet managers, state regulators and law enforcement.
- Education needs to be directed to the regulator/enforcement community at the federal and state levels. The motor carrier industry to some degree needs some educating. The academic community needs to be encouraged to look toward ITS for solutions.
- Education is needed across the spectrum in the six user services. Federal/state people, industry and vendors need training.
- The fears of industry have to be addressed. Industry, contractors, vendors and manufacturers need to be reached.
- Upper management of all segments of the CVO community. There needs to be training for the guys who use the technology-revenue collectors, law enforcement.
- There needs to be a lot of training for industry, enforcement. It can't be just conceptual, it must be hands-on.
- Industry, those who will pay for the products, must understand how the technology will affect their bottom line and help them make or save money. Drivers must learn to trust the technology and understand it is in their best interests and will make their jobs safer. Government must understand that technology is a tool to help serve the public.
- Education/training is a matter of introducing people to the technologies. Technology adoption will be on a case by case basis.
- Everyone needs it. People need to understand why ITS is needed. Those who will have to use the equipment, such as law enforcement, will have to be'trained on the equipment. Drivers need to know what is and what isn't happening to them.
- There needs to be education and training for those who will administer the system, i.e. regulators.
- There needs to be technical training for those who will operate and maintain the technology. Also, those who use the technology need to be educated about the benefits.
- Industry. Better information provided by the state will ratchet down on industry, will make owners/operators aware that the program is geared toward safety and will get unsafe carriers off the road. For state personnel, this program is part of a re-engineering of government. Roles are going to change, and agency emphases are going to change. The general public needs to be better educated on how to share the roads with trucks.
- There needs to be education and lots of it about the original vision and strategy. Once you have that, missionaries can go out and spread the word. There's not an intense need to train people on the software, they already have that training.
- There's got to be more exposure about what the technology will do. Drivers need more information about how the technology will help them.

- From the bus perspective, sell the operators on the benefits. Any high-tech components on the bus have to be addressed. Owners/operators will ask how much will this cost me? Drivers will disable the technology if it monitors their performance.

- Broader outreach to key government executives-governors, key federal legislative leaders-is needed. Also, a more broad-based group of carriers must be reached.

- None of the technology is terribly complicated. There is no need for training and outreach. Local division offices should have some training in CVISN.

- Train the politicians.

15. Do you see this as a voluntary program or not? Is this an important issue?

- It's a showstopper if government officials' preliminary action is to say one thing and then do something else.

- It has to start as a voluntary program for a long time. Government can't expect carriers to spend their money to buy technology for a mandatory program. Maybe the program should never be mandatory. You can't tell people how to run their business.

- If the program is to be successful, it must be mandatory' handed down by the government.

- Yes and yes. Everybody-government, industry, consumers. A win/win/win scenario is most conducive to a voluntary program.

- Yes, it should be voluntary. The situation should evolve to the point where you want to adopt the technology because it makes sense. The program probably will begin as voluntary, but it will eventually become mandatory. Regulators and operators will see more efficiency, cheaper delivery costs and it will become a necessity for state government.

- Yes, this is an important issue. The trucking and law enforcement communities. Everything depends on how fast carriers need to make the investments. It affects their budgets if the program is mandatory. If the program is voluntary, then the carriers can adopt at their own pace.

- Yes. It is important that the program be voluntary. Society. If the federal government imposes regulations on industry, we might wind up with a less efficient system. Under limited circumstances, if there were certain features about the equipment that affected safety, then government would have an impetus to make that piece of equipment mandatory. Benefits must outweigh costs.

- Yes. Yes. The people affected by the technology-state government and motor carriers. A mandatory program would change the way these people do business

- It has to be voluntary. One of the major fears of industry is that ITS represents another layer of regulation. It is an extremely important issue. Industry, contractors, vendors, manufacturers.

- For the program to work at optimum efficiency, the program will have to be mandatory. Yes, it is an important issue. For all parties. Deployment means increased efficiencies of government operations from a safety and cost perspective. For the private sector the technology means greater productivity.

- Yes. Yes it is. We need more highways built.

- For the short term, yes it should be voluntary. For the long term, no. We're headed for the day when trucks coming off the assembly line will have the transponder built in. Yes, it is a very important issue. Gridlock is only going to get worse and accidents will kill more people.
- Certainly now, yes. It is not at the top of our list of important issues. It is important to the developers. It doesn't need to be important to anyone else.
- I would like it to be voluntary. Yes, it is. Carriers, and to states who will have to pay for transponders. Who will pay for the services? What are we setting ourselves up for here?
- Yes. Yes. To both motor carriers and regulators/law enforcement. The program offers the potential for improved safety and enhanced economic advantage.
- Yes. At this time it is. Trucking industry. To gain the trucking industry's support, they have to feel that they are not being forced to do this.
- If the program is mandatory, it will lose industry support. I think so. Users of the highway system. Carriers will reduce the costs of doing business and improve the business climate.
- Yes, Every other road leads to a fight. No one will use the technology if it isn't voluntary. It's a red herring. It's not important to the entire program. Law enforcement and the small carrier if he is forced to buy the technology.
- At this point the program is voluntary. In the future, we would like to see it be made mandatory. Yes. Regulators because it will help them reduce the staff, equipment, resources costs.
- Yes. Anyone who doesn't want to participate will put themselves at a competitive disadvantage. A mandatory program for rural owners will not benefit them. ITS is an important issue. All owners. Without ITS, all traffic will come to a standstill.
- Most of it should be voluntary, although some parts may need to be mandated. Yes. Industry, although they may not realize it is important to them.
- No, it won't be voluntary. It's important from the standpoint if government understands its role as opposed to government taking the position that it knows what is best for America.

16. Who shouldpay for ITS/CVO services? Who will pay for services? How will this work?

- Mostly users-haulers and shippers. Costs will be passed along to the end user. Government should only provide seed money to get the program started.
- Most likely, those who benefit will share the costs. Costs don't necessarily have to be allocated directly. Some money should come out of the Highway Trust Fund because truckers are major contributors to the trust fund.
- It should be a mix of federal and state matches with contributions from industry to the extent that motor carriers benefit from the technology. Research will determine where the savings are to be found through enhanced revenue collection and improved productivity.
- It is a shared responsibility between government, the user and consumers. It depends on where the value-add is.

- It's a 50/50 proposition. Industry may have to pay. In this case, water will have to seek its own level.
- Those who benefit ought to pay. It has to be made clear that the benefits are public and are not derived solely by the private sector. Carriers will pass savings on to their customers. Government tends to add the electronic process on top of the existing manual process and then don't pass savings on to the carriers.
- Costs should be borne by the carriers because they have incentives to equip their vehicles with technology that enhance safety and productivity.
- The beneficiaries. There are efficiencies to be gained and cost benefits created by automating processes. Everyone needs to pitch in-federal government, the states, industry.
- States and industry. The federal government must get the program started. Systems between states must be compatible for the program to work.
- The taxpayer or consumer in the end will pay for services through higher taxes or prices.
- Everyone should pay. Everyone who uses the system should pay for it either through user fees or taxes. Industry will pass its costs on to the consumer.
- Those who benefit the most should pay. Costs will be passed onto the consumer. Those who use the system will pay for the services.
- At the basic level, the user or commercial vehicle operator. It should be looked at as an infrastructure investment, something that is fair game for cost sharing. Users will pay for the services. I can't see a viable way for the federal government to pay all of the costs. The ITS program can be compared to the Interstate system that was in some places subsidized by tolls. There is a certain fairness in levying user fees if they are fairly applied
- The beneficiaries-carriers' states, customers should pay. All of the above will pay for the services.
- Users. It will be split-users and administrators (states) are shelling out money for these systems. Once a cost/benefit baseline has been created, then you can come up with acceptable fees.
- It should be users. The cost will be shared by users, the states and the federal government.
- It's government's responsibility to improve the way it does business. The major investments will be made by government. Systems need to be designed so that they can be accessed in a cost affective manner. Taxpayers will ultimately pay.
- It's a safety issue. Responsibility belongs to the state to pay to update its systems and technology. Help, Inc. says states need this technology to improve their performance.
- Government and states. Surcharges on the trucking industry--fuel tax, road tax.
- CVO community should pay something. All beneficiaries should pay something. Costs should be apportioned fairly. Taxpayers through pass-throughs such as higher prices on goods and services.
- Depending on the program, costs should be shared by users-government' industry and the ITS community. I fear it will be the carriers or government.
- We're talking about peanuts here. The cost will be minuscule. Users through a fuel tax.

- Conceivably, the beneficiaries if there are any benefits. Users should weigh benefits to see it the program makes economic sense. Users-the targets, the victims-will pay for this.

17. Is there anything you or the program is not getting from the ITS/CV0 office that you would like them to provide?

- We have no problem getting information. There is no indication that OMC is holding back.
- No.
- No. Within the available resources, they do quite well.
- No.
- The general feeling is the process is piecemeal. There needs to be more coordination, a critical path to what is being done. A strategic plan must be developed.
- ITS/CVO must provide leadership. We need programs we can work with. We don't know who is doing what.
- FHWA should publish what they are working on. ITS America should publish project information.
- No. It's a huge job; they need more people.
- They are working hard to deliver what we need. They are open to criticism. FHWA must take a stronger leadership position. If you're the one writing the check, you can call the shots. Everything can be negotiated.
- Probably not, no.
- More information on such topics as border crossings.
- No.
- Not at this time.
- There needs to be more guidance on where they want us to go with the program. Our state program is on the fast track. We're planning as we deploy. Vendors and defense firms are looking to get into this line of business. The federal government can give us a sense of where we're going.
- A lot more information.
- They are doing a fabulous job. They are willing to listen.
- They have been very supportive.
- More money. We appreciate what they have provided. They need to fund strategic outreach. They need a program.
- We would like to see regular reports on ongoing programs that end with stated objectives of the program and the federal/state investment At any given time, I have no clue how many programs are ongoing.

18. Do you hear any hype about the program that you think needs to be toned down? If ***so, what?***

- There is not enough hype to tone down. Don't try to oversell the program.
- No. I'm concerned about some safety issues, compliance audits. Anything can go wrong at any time.
- There is a problem of overselling the program, which could cause expectations to exceed resources. Available resources must accompany the hype.
- The program is not being oversold. If anything we may need more hype.
- Don't even think about that. If we don't blow the horn about the program, who will?
- There needs to be a push by organizations such as the HELP, Inc. - PrePass program. There is a lot of animosity out there because of the pressure being applied by federal and state government. Each company has to promote its program. Only if industry accepts the program can it successfully be pushed.
- The program is being hyped as a cure-all for some things and it's not. There's too much emphasis on the technology.
- We must push the idea of using information systems to go after "bad guys." We must be careful how we describe this process because offenders are a small percentage of the overall trucking community.
- No.
- The CVO committee and ITS America tend to offer technology solutions in broad brush cure-alls to the nation's problems to those who are uninformed, skeptical or who have been burned before. Technology is the solution, but there are no standards yet for the technology. ITS America proponents need more answers and less hype. You need the technology to back up the talk.
- I can't think of any.
- The only hype is the talk of how this information will help the states regulate the trucking industry better. This scares industry because truckers don't want their trucks checked every time they pass a station. There are privacy concerns here.
- The image that ITS is corporate welfare needs to be countered and put to rest.
- If anything, the hype needs to be turned up. CVISN is a good vehicle to make people more aware of the role that trucks play in our daily lives. CVISN could be a vehicle to improve safety.
- No.
- No, I haven't heard a lot of hype. There needs to be more hype about the program. The average carrier thinks ITS technology is "Star Wars."
- No. The ITS program is exciting and needs to be hyped. There is a need for more mass media coverage.

- We're hyping a little too much, too soon to motor carriers before we've demonstrated the cost benefits. The federal government has gone out and tried to motivate this program and move it along rather than letting the 50 states choose their own programs.
- Technology is not best way to get things done. You need more experienced people who know what they are talking about regarding the program.
- There have been unrealistic benefit claims made. Who cares about the location of goods in transit. Nobody cares. It's not technology that I'm interested in paying for.

19. Random thoughts and slogan ideas.

- Some people are concerned about a loss of privacy under the new technology. We need to be alert to maintaining carriers' right to privacy.
- The challenge is to get people to absorb the program and technology in a logical way.
- We need to emphasize efficiency, economy and reduced congestion.
- Monitoring the paperless truck through technology. Smart.
- "Go, Go, CVO."
- Be cautious about HELP, Inc. because it is politicized to such a degree.
- FHWA ought to inform government entities and trade associations about projects that are going on around the country so that they can make their constituencies aware.
- We're concerned about the many agendas that have been expressed. What matters is getting from point A to point B on time.
- In light of the serious federal debt, government has the task of being fiscally responsible. This should be first and foremost on their minds. We waste too much money.