

Midwest CVO Mainstreaming



Kansas

Missouri

Nebraska

South Dakota

Prepared for
Midwest Mainstreaming Consortium

Prepared by
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October 26, 1998

Midwest CVO Mainstreaming: Regional ITS/CVO Coordination Plan

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To access a downloadable version of this document, go to the Federal Highway Administration's ITS/CVO website located at <http://www.avalon-ais.com/itscvo/> or the Midwest Mainstreaming website at <http://www.ctre.iastate.edu/projects/attech/midwest/>.

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The Midwestern states of Kansas, Nebraska, Missouri, and South Dakota are significant contributors to the United States agricultural economy. Together these states export commodities valued at \$259 billion annually, or almost 6 percent of commodities produced within the United States (1993 Commodity Flow Survey), while making up only 3.9 percent of the population. Because these Midwest states can also be characterized as rural, the motor carrier industry is of particular importance, providing an integral link between producers and their markets. Seventy-seven percent of all commodities originating in the region are transported by truck.

Throughout the region, state agencies responsible for the regulation of motor carriers strive to maintain the highest safety standards and to protect the citizenry's investment in transportation infrastructure. States must also strive to control the cost of regulation both for the motor carrier industry and for the taxpayer. Toward these ends, this regional Intelligent Transportation Systems/Commercial Vehicle Operations (ITS/CVO) coordination plan, along with the accompanying individual state ITS/CVO business plans, provide for the use of information and communication technology to improve the effectiveness and the efficiency of Commercial Vehicle Operations regulation.

The Federal Highway Administration's Office of Motor Carriers (FHWA OMC) has undertaken an ITS/CVO program to promote the deployment of ITS/CVO technology and to ensure that information can be shared electronically among states. At the center of the Federal Highway Administration (FHWA) ITS/CVO program is the Commercial Vehicle Information Systems and Networks (CVISN) initiative. CVISN provides a national architecture, a set of national standards, and a consistency assurance process to ensure compatibility. The Midwest Mainstreaming ITS/CVO Coordination Plan outlines the region's strategy for meeting the requirements set forth by the FHWA.

The plan was developed by the Midwest Commercial Vehicle Operations Mainstreaming (M-CVO-M) consortium. The consortium consists of state agency officials involved in the enforcement and/or regulation of commercial vehicle operations, Federal Highway Administration Office of Motor Carrier representatives, and motor carrier industry representatives from each of the member states.

To enable the implementation of interoperable, nationwide ITS/CVO services, the regional coordination plan

- Defines multi-state technical initiatives that will address issues common to two or more states
- Identifies areas where coordination is needed among individual state deployment activities, therefore creating opportunities for the states to share "lessons learned"

- Describes future activities of the regional forum and its regional champion
- Ensures coordination with other regions and the national ITS/CVO program

ORIGINS OF THE ITS/CVO REGIONAL COORDINATION PLAN

The FHWA defines Intelligent Transportation Systems (ITS) as systems which employ telecommunications, computer sensors and robotics, and electronic technologies to obtain and provide information about the performance of surface transportation facilities (highways, roads, transit, and rail), the demand for travel, vehicle to vehicle and vehicle to roadside communications, and, in some cases, weather and environmental conditions and impending crashes. These ITS applications combine the power of information with control technologies to better manage transportation. By improving the efficiency and safety of the nation's surface transportation system, ITS can significantly enhance the travel options and travel experiences of the American public.

The FHWA's ITS Program has seven major elements. The focus of this coordination plan is the ITS/CVO element. ITS/CVO includes ITS technologies which uniquely support Commercial Vehicle Operations (CVO). CVO is the movement of goods and passengers via commercial vehicles over the North American highway system and the activities necessary to regulate these activities.

The US Department of Transportation has developed a National Program Plan for ITS. The plan includes the following objectives for ITS/CVO:

- To improve highway safety
- To streamline credentials and tax administration
- To reduce congestion costs for motor carriers and
- To ensure regulatory compliance and equitable treatment

The ITS/CVO program is being organized to develop and deploy eight primary capabilities:

- Safety information
- Administrative processes
- Electronic screening
- International border clearance
- Automated inspection
- On-board safety
- Hazardous material incident response
- Fleet and freight administration

Clearly the economic well-being of the Midwest Mainstreaming region is dependent upon efficient movement of goods. The volume of commercial vehicle traffic has grown significantly in recent years and is projected to continue to grow at or above the current rate. In response to the growing demand placed on both state infrastructure and regulating offices, state agencies are actively pursuing cost effective applications of various ele-

ments of ITS/CVO technology. The regional coordination plan and state business plans reflect this pursuit.

CVISN

Commercial Vehicle Information Systems and Networks (CVISN) refers to those ITS information system elements that support commercial vehicle operations. CVISN includes information systems owned and operated by governments, carriers, and other private sector stakeholders. The CVISN Architecture will provide a technical infrastructure to link state and regional programs and information systems, including common standards for electronic communication among the participating agencies and carriers.

In addition to developing the technical infrastructure (system architecture and standards) the FHWA is promoting the deployment of the systems through the sponsorship of the CVISN pilot and prototype programs. Eight pilot and two prototype states have been selected to take part. The FHWA provides project funding, technical support and training to these 10 states. By starting with a small number of states, the FHWA seeks to both demonstrate the benefits of ITS/CVO applications and to gain insight into the issues that will continue to define ITS/CVO deployment.

One lesson learned in these early CVISN demonstration projects is that success is greatly dependent on interagency cooperation. Currently, motor carrier regulation and credentialing responsibilities are shared by several agencies within each of the Midwest Mainstreaming member states. The extent of the interagency cooperation varies from state to state. As the states and their agencies strive to meet their objectives, they will need to develop both greater interagency coordination within the states and regional coordination and cooperation in ITS/CVO activities and deployment

Mainstreaming

The FHWA has initiated the Mainstreaming program to support the formation of state ITS/CVO working groups, to facilitate strategic ITS/CVO planning at the state level, and to provide a forum for regional coordination of effort. Mainstreaming is defined as moving ITS/CVO from research, development, and testing to model deployment, then full deployment at the state and regional levels. Mainstreaming requires having the proper organizations involved, business plans developed, outreach/training, and financial commitments in place to deploy ITS/CVO core services, technologies, and information systems. Midwest Mainstreaming is one of five regional consortia participating in the program.

The Midwest Mainstreaming consortium is working with the motor carrier industry, the federal government, and academic partners to meet the requirements established by the FHWA.

OVERVIEW OF THE PLANNING PROCESS

The state business plans were developed by state ITS/CVO working groups. These working groups include representation from all state agencies involved in the regulation or enforcement of commercial vehicles, the FHWA, and the state motor carrier associations. Although each state approached business plan development somewhat differently, there were common themes. Each group began by developing a vision statement. Using the vision statement as a guide, functional area experts defined the obstacles within their area and proposed specific strategies for overcoming these obstacles. Projects were then defined and presented to the working groups for discussion and prioritization.

The working groups used two documents to guide the format of their business plans: the "ITS/CVO Business Plan Guidelines" developed by Cambridge Systematics under the direction of the FHWA OMC and the Missouri CVISN application (submitted to the FHWA in July 1996). The Center for Transportation Research and Education (CTRE) provided information regarding format and requirements and kept the working groups up to date with national ITS/CVO program developments.

A steering committee was formed to guide the development of the regional coordination plan. The information is drawn from state business plans, regional consortium quarterly meetings and directly from the steering committee. CTRE was responsible for editing each draft.

Representatives from each of the four member states and the FHWA make up the steering committee. Members include:

Kansas	Ken Gudenkauf, Department of Transportation
Missouri	Gary Steinmetz, Missouri State Patrol Jimmie Plumb, Department of Transportation
South Dakota	Dave Huft, Department of Transportation
Nebraska	Joe Botsford, Department of Motor Vehicles Capt. Steve Groshans, Nebraska State Patrol
FHWA	John Carkin, Region 7, OMC, State Programs Manager Alan Brown, Region 8, OMC, State Programs Manager

The steering committee has operated under the following timeline:

November 7, 1997	Steering committee members met to come to a consensus on the major points of the regional plan. For those items in which consensus was not possible, all options were presented in the first draft.
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| December 15, 1997 | The first draft was distributed to members of the steering committee for review and comment. |
| January 22, 1998 | A second draft was presented at the Midwest Mainstreaming quarterly meeting for review and comment. |
| May 1 , 1998 | CTRE incorporated the comments of the states into the third draft. |
| May 31, 1998 | The Midwest Mainstreaming Regional Coordination Plan was submitted to the FHWA for review. |

The Regional Coordination Plan will be updated annually. The consortium will use the Coordination Plan to document participation in ITS/CVO training and CVISN workshops and to update progress on individual plans. Revisions will be coordinated by the regional champion and the state working group leaders.

DESCRIPTION OF THE REGION

The agricultural economy of the Midwest has changed significantly in recent years. Prior to the 1980s, the economy of the Midwest consisted mostly of the production of raw agricultural products, with some processing. Raw products often made their way to processing facilities via rail. During the past two decades, the agricultural processing sector has been much more apt to locate facilities near the source of production. The primary mode of transportation, both to and from these facilities, is the truck. Both the production and processing ends of the agricultural economy have grown dependent on the motor carrier industry.

Recovery from the agricultural recession of the 1980s has not been even throughout the rural Midwest. With the emergence of the agricultural processing sector and the diversification of the rural economy overall, remoteness or distance from market has become more of a liability.¹ In comparing economic activity by county, the Federal Reserve Board of Kansas City found that rural counties in close proximity to trade centers or to the Interstate highway system have fared better than those that are not.

State policy makers must be aware that the success of the rural Midwest economy depends on its ability to overcome the liability of remoteness or to provide for efficient movement of goods from rural communities to trade centers. ITS/CVO technology is recognized as a cost effective method for improving efficiency.

Economic and Organizational Characteristics

The following summaries introduce the unique political, economical, and regulatory characteristics of the member states. For a more definitive description, please refer to the individual state ITS/CVO business plans. As referenced in the previous section, quantitative descriptions of the states' economies, road networks, and commodity flow patterns are included in the appendices in table format.

Kansas

From a political and organizational standpoint, Kansas seems a good candidate for ITS/CVO initiatives. The current governor comes from the motor carrier industry and actively promotes a more customer service oriented approach to state government. In addition, the state transportation engineer favors investing in technology for motor carrier safety instead of infrastructure for large enforcement facilities.

With several motor carriers currently using transponders for electronic toll payment on the Kansas Turnpike, the motor carrier industry has experienced the benefits of at least one ITS application. The working

group intends to explore the possibility of adding mainline weigh-in-motion and screening for traffic entering Kansas from Oklahoma, making use of existing transponders.

Kansas state agencies have begun the process of integrating CVO related databases. In 1994, Kansas completed the Motor Carrier Status Screen. This on-line real-time application links four separate databases to provide current status of a motor carrier. It provides International Registration Plan, International Fuel Tax Agreement, state tax, and authority status. The screen is available to all motor carrier inspection stations and all regulatory agencies.

Nebraska

The state has an economic base in agriculture and is a major participant in the trucking industry. Once Governor E. Benjamin Nelson established a Motor Carrier Advisory Board, industry and political support for change increased, resulting in a positive impact on ITS/CVO initiatives to improve service delivery. Nebraska has the nation's only one-house legislature, the Nebraska Unicameral. This type of legislative arrangement allows for faster passage of introduced legislation. The governor has line item veto authority on all legislation passed by the unicameral legislature.

Nebraska requires each motor carrier to register for several different credentials including registration, fuel tax, IRP, IFTA, and non-standard load permits. The ITS/CVO working group is working on a project that will link driver and vehicle data. The state agencies that have direct contact with carriers have benefited from a one-stop approach for payment of fees and issuance of operating permits. This transition also has helped to unite what was previously two separate data bases unable to communicate with one another. Currently the Motor Carrier division of the Department of Motor Vehicles is able to access both IFTA and IRP data thanks to the One-Stop shop pilot initiative. The Nebraska Department of Roads, the Nebraska State Patrol, and the Department of Motor Vehicles are working together on electronic clearance of vehicles and weigh-in-motion devices that will help carrier enforcement officials concentrate their efforts on vehicles with marginal or poor safety records.

Missouri

Prior to the Mainstreaming program, Missouri developed and now maintains a cohesive CVO working group of 10 individuals representing a variety of state agencies, the motor carrier industry and the FHWA. The Missouri Department of Transportation is the lead agency for coordinating ITS activities including ITS/CVO.

In 1993 the states of Missouri and Kansas participated in an ITS institutional issues study to determine what state barriers existed among Missouri state agencies and between Missouri and other states. This study looked at state and federal regulatory requirements and processes within each agency. From this review, Cambridge Systematics Inc. with WHM Transportation Engineering Inc., issued the "Kansas-Missouri ITS Institutional Issues Study" in December 1994. Missouri, unlike many other states, had very few institutional barriers. For enforcement purposes, regulatory agencies and the Missouri State Highway Patrol have shared data for many years. One area of regulation data not shared related to the oversize and overweight permits.

Missouri felt that an additional study was needed to determine a strategic direction for implementing electronic screening of commercial vehicles. The Center for Transportation Research and Education at Iowa State University was contracted to look at existing conditions, electronic screening architecture, and a comparison of alternatives for implementation and guidance for electronic screening implementation. This study considered commercial vehicles traveling on the Oklahoma and Kansas turnpikes because they often traveled in Missouri as well. This joint travel could possibly be an opportunity for Missouri to bundle electronic screening with electronic toll collection. Missouri was looking for a strategic direction that would minimize the financial investment and technical risk of implementing electronic screening.

In 1995 Missouri was invited to participate in an operational field test called the Midwest Electronic One-Stop Shop Program (MEOSS). This program would test the feasibility of electronic data transmission to states from the motor carrier's place of business for compliance with IFTA, IRP, the Single State Registration System (SSRS), and the oversize/overweight (OS/OW) permits. Software would be developed that would allow the state agencies and the motor carrier to electronically communicate with each other to request and receive motor carrier credentials.

During this time, members of each Missouri state agency involved in motor carrier regulation and enforcement and representatives from the motor carrier association and the regional FHWA were continually meeting and planning state CVO activities. It was decided to formalize this group into an ITS/CVO Standing Committee.

South Dakota

State agencies in South Dakota have significantly reduced staff in recent years, increasing workloads for existing staff. ITS/CVO projects have been introduced in states precisely because the technologies and services that are developed offer solutions to agencies that are trying to find ways to regulate the commercial vehicle industry and provide customer services at the same time that staffs are shrinking and budgets are not increasing.

South Dakota is a participant in number of ITS/CVO projects. These projects range from providing up-to-date weather information to all motorists via cellular phone, the Internet, and electronic mail, to exploring the feasibility of electronic credentialing for motor carriers.

The following table is a break down of CVO regulatory responsibilities by agency for the four states of the Midwest Mainstreaming Consortium:

Activity	Missouri	Kansas	Nebraska	South Dakota
Oversize/ Overweight Permits	DOT	DOT	Department of Roads	Highway Patrol with the DOT
Commercial Drivers' Licenses Issuance/ Administration	DOR (Driver Vehicle License Drivers' Bureau)	DOR	DMV	Dept. of Com- merce and Regulation
IFTA	DOR (HRC)	DOR	DMV	DOR
IRP	DOR (HRC)	DOR	DMV	DOR
Credentials Enforcement	Highway Patrol	Highway Patrol	CED	Highway Patrol
Safety Compliance Reviews	DECD-MCRS	C C	CED	FHWA/OMC
Hazardous Materials- Permitting	Not Required	Not Required	CED	Not Required
Hazardous Materials- Enforcement	Highway Patrol	Highway Patrol	State Patrol	Highway Patrol
Single State Registration CommissionSystem	DED	C C	DMV	Public Utilities
Size & Weight Inspections	Highway Patrol	Highway Patrol	CED	Highway Patrol
Safety Inspections	Highway Patrol	Highway Patrol	CED	Highway Patrol
Federal Motor Carrier Safety Regulations	Terminal- MCRS Roadside-MSHP	C C	CED	Highway Patrol
Toll Collections	Not Applicable	Turnpike Authority	Not Applicable	Not Applicable

CVO Regulatory Responsibilities

Key to abbreviations in the table:

DOT-Department of Transportation

DOR-Department of Revenue

DED-Department of Economic Development

DMV-Department of Motor Vehicles

CED-Community/
Economic
Development

HRC-Highway Reciprocity Commission

CC-Corporation Commission

IFTA-International Fuel Tax Agreement

IRP-International Registration Plan

MCRS-Motor Carrier and Railroad and Safety Division

MSHP-Missouri State Highway Patrol

States' Experience with ITS/CVO Applications

ITS/CVO applications are not new to the states of the Midwest Mainstreaming Consortium. Motor Carrier Enforcement agencies in each of the states have been utilizing national databases to track and document carrier safety records for years. Here is a list of applications being used by the states along with a brief description of each application.

Missouri

- SAFETYNET local area network
- Desktops link interstate weigh stations to SAFETYNET
- The portable units use ASPEN software and MCREGIS
- The Missouri State Patrol's laptop inspection computers are loaded with ISS

Kansas

- Motor Carrier Status Screen and a Motor Carrier Central Permit system
- The Kansas Statewide Telecommunications Roads Access (ASTRA)
- The laptop based ISS system is used by the highway patrol

Nebraska

- SAFETYNET system applied in a frame relay network
- ASPEN and ISS

South Dakota

- PRISM
- RWIS,
- SAFETYNET
- ASPEN

MCREGIS

(Motor Carrier Regulation Information System) This distributed database contains updated descriptions of federal regulations that pertain to the motor carrier industry.

PRISM

(Performance and Registration Information Systems Management) The PRISM program ties commercial vehicle registration privileges to the carrier's safety performance. Chronically unsafe carriers risk losing their registration privileges if they prove unable or unwilling to reach acceptable safety levels after a designated improvement period. The project is a cooperative effort involving the FHWA OMC and five pilot states: Iowa (lead state), Oregon, Colorado, Minnesota, and Indiana. South Dakota intends to join these five states.

RWIS

(Road Weather Information System) State transportation agencies from Iowa, Missouri, Illinois, and Wisconsin have formed FORETELL, a public-private partnership to integrate ITS with advanced weather systems to enhance highway maintenance management and traveler information. The FORETELL partnership submitted a proposal for the development and operational testing of a weather information system for surface transportation. In October 1997, the FORETELL proposal was selected to receive \$1.3 million in funding from the FHWA. The objective of this effort is to implement an integrated weather system that improves the scope of atmospheric and road surface condition information available to highway users.

SAFETYNET

This distributed system is used to manage safety data for both interstate and intrastate motor carriers. SAFETYNET allows federal and state offices to electronically exchange data with the Motor Carrier Management Information System (MCMIS) MCMIS is a central repository of comprehensive safety data on interstate motor carriers maintained by the FHWA's Office of Motor Carriers.

ASPEN

The Aspen roadside inspection system software enables inspectors to conduct, document and upload roadside commercial vehicle/driver inspections using laptop computers.

ISS

The Inspection Selection System was developed as part of the Aspen roadside inspection software system. It allows for the use of prior carrier safety data to guide the selection of vehicles and drivers for roadside inspections. The functions of ISS are being incorporated into the SAFER system.

SAFER

The Safety and Fitness Electronic Records system is a national database under development by the FHWA. SAFER will provide standardized carrier, vehicle, and driver datasets (snapshots and reports) containing limited safety and credentials information to authorized users. SAFER is an on-line system that will be available to users over a nationwide data network, and will return an interstate carrier, vehicle, and/or driver snapshot to the requester within a few seconds. The design goal for a query response for a single record is 10 seconds or less 90 percent of the time; not accounting for dial-up time.

**Midwest Electronic
One-Stop Shopping:
A Regional ITS/CVO
Project**

The primary purpose for the SAFER/CVIEW (Commercial Vehicle Information Exchange Window) snapshots is to support automated screening of vehicles at commercial vehicle check stations at mainline speed. In one operating scenario, as a vehicle approaches the check station, identification numbers for the carrier, vehicle, and driver would be read from the truck's transponder. Based on a preset identification number, the information from the SAFER snapshots would be accessed and a decision made as to whether or not the vehicle is to be pulled into the static scale. A signal would then be sent to the transponder informing the driver whether to pull into or bypass the weigh station. The snapshots also provide cross reference information useful to inspection and enforcement personnel once a vehicle has been brought in for inspection.

The Midwest Electronic One-Stop Shopping (MEOSS) program is the only one of three FHWA-funded operational tests of electronic credentialing that covers all four major credential areas required for commercial vehicle operation in the United States. The four credential areas include:

- Fuel tax credentials and permits through IFTA
- Registration credentials and permits through IRP
- Operating authority/proof of insurance through SSRS
- OS/OW credentials and permits issued by each individual state

The two main objectives of the MEOSS project were to

- 1) Design and test a simple, easily deployable, low cost, and upwardly compatible one-stop electronic system for the purchase of motor carrier credentials that will make it possible for a motor carrier to apply for and receive all the necessary credentials or permits electronically from either the base state or the necessary individual states, and
- 2) Evaluate the improvements in both state and motor carrier productivity offered by streamlining the process for motor carriers to purchase credentials by utilizing a simple, easily deployable, low cost, and upwardly compatible one-state electronic system.

The states participating in the MEOSS program will continue to benefit from the increased testing and standardization made possible through sharing development with CVISN, just as CVISN pilot states will benefit from the large test coverage and inclusion of electronic one-stop shopping for oversize and overweight permitting by the Midwest project. All parties will benefit from the resulting increased standardization of ITS/CVO protocols.

The following is a summary of those issues and opportunities that were identified in both the state business planning process and at the Midwest Mainstreaming consortium meetings. Issues and opportunities are divided into those germane to the regulation of commercial vehicle operations and those germane to the anticipated ITS/CVO deployment.

Commercial Vehicle Regulatory Issues and Opportunities

Issue

The overriding objective of state motor carrier enforcement activities is to provide the highest degree of highway safety for both motor carriers and the traveling public.

Opportunity

ITS/CVO applications such as electronic screening and incorporation of the SAFER database in the inspection process allow for more targeted and thus cost effective enforcement.

Issue

State transportation agencies are responsible for the preservation of highway infrastructure.

Opportunities

Automated oversize/overweight permitting will simplify the process of compliance for motor carriers and enhance the states' ability to track oversize/overweight operations. Electronic screening applications allow weight enforcement officers to check a significantly greater percentage of commercial vehicles for compliance.

Anticipated ITS/CVO Deployment Issues and Opportunities

Issue

The motor carrier industry is an integral part of the regional economy. Many trucking firms are dependent on very small profit margins and can ill afford to absorb additional costs without realizing equal or greater additional benefits. To gain the support of the motor carrier industry, tangible benefits must be demonstrated.

Opportunities

State agencies in the region have developed a strong working relationship with the motor carrier industry. Through the mainstreaming initiative, the motor carrier industry representatives are given a real opportunity to

participate in both the state and regional planning process. Some key motor carriers have expressed support for the concept of electronic data interchange (EDI) as a way to reduce paperwork. Technical advancements support efficiency enhancements. As members of the business community, the motor carrier industry recognizes the potential long term value of ITS/CVO applications.

Issue

There is currently no secured source of federal funding. It is difficult to develop state plans without a greater degree of certainty.

Opportunity

The member states, through their involvement in the Mainstreaming program and planned involvement in the CVISN workshop program, will be in position to take advantage of future federal funding opportunities if and when they come available.

Issue

Generally, the larger carriers are better situated to take advantage of ITS/CVO applications. State regulatory strategies should not give one segment of the industry competitive advantage over another.

Opportunity

Development of an outreach strategy is part of the business planning process. Through outreach, the ITS/CVO working groups can educate smaller motor carriers and incorporate their concerns into the planning process.

The Midwest ITS/CVO Mainstreaming consortium supports the mission, guiding principles, and goals and objectives of the Federal Highway Administration's ITS/CVO program. The Midwest Mainstreaming Consortium and each of the member states have developed similar statements that both support the intent of the FHWA and reflect the unique philosophy and approach of the consortium members.

To achieve safe and efficient movement of commercial vehicles through the use of cost-effective methods and technologies to streamline state regulatory, enforcement, and motor carrier practices while increasing levels of safety and productivity for both carriers and state agencies.

CVISN Guiding Principles

- A balanced approach involving ITS/CVO technology as well as institutional changes will be used to achieve measurable improvements in efficiency and effectiveness for carriers, drivers, governments, and other CVO stakeholders. Specific technology and process choices will be largely market driven.
- The CVISN architecture will enable electronic information exchange among authorized stakeholders via open standards.
- The architecture deployment will evolve incrementally, starting with legacy systems where practical and proceeding in manageable steps with heavy end-user involvement.
- Safety assurance activities will focus resources on high risks and be structured so as to reduce the compliance costs of low-risk carriers and drivers.
- Information technology will support improved practices and procedures to enhance CVO credential and tax administration efficiency for carriers and government.
- Roadside operations will focus on eliminating unsafe and illegal operations by carriers, drivers, and vehicles without undue hindrance to productivity and efficiency of safe and legal carriers and drivers.

Midwest Mainstreaming Guiding Principles

- When possible the member states will realize efficiencies of scale by working together. This effort may include coordinating weigh station and inspection activities, group purchase of ITS/CVO equipment, and/or multi-state deployment initiatives.
- The member states agree, in principal, to electronically exchange enforcement data in support of electronic screening, out of service verification, and other enforcement activities.

STRATEGIC OVERVIEW

Mission Statement

Guiding Principles

Goals and Objectives

- The member states will carefully consider the economic impact of all proposed ITS/CVO projects on both the motor carrier industry and state government.
- The Midwest ITS/CVO Mainstreaming consortium will continue to serve as a regional forum for the discussion and coordination of both state and multi-state ITS/CVO initiatives.
- The member states will strive to provide the same capabilities and level of service for interstate and intrastate carriers.
- The member states will strive to address the needs of both large and small carriers.

The FHWA's ITS/CVO program is an integral part of the National ITS strategy. ITS/CVO initiatives such as Mainstreaming can be understood as tasks carried out in support of the overall ITS program goals.

ITS National Program Goals

- Improve safety
- Increase efficiency
- Reduce energy and environmental impact
- Enhance productivity
- Enhance mobility
- Create a United States ITS industry

The Midwest ITS/CVO Mainstreaming consortium strives to optimize resources, utilize the new technology available, and better serve all the stakeholder groups in line with the national ITS/CVO and CVISN programs. The following goals and supporting objectives have been drawn from the ITS/CVO business plans of member states and created by the regional coordination plan steering committee. These goals and objectives were reviewed and endorsed by the consortium as a whole.

Member State ITS/CVO Program Goals and Objectives

- To improve highway safety by focusing enforcement resources on high-risk carriers, drivers, and vehicles
 - Insure compliance of size and weight requirements
 - Improve deskmade and roadside access to safety information
 - Improve safety inspection and review processes
 - Enhance ability to monitor the enroute safety status of the vehicle and driver

- To streamline CVO tax and regulatory functions
 - Enable electronic credentialing and tax filing
 - Enhance interagency and interstate data and funds exchange
 - Provide credentials information to authorized officials electronically
- To reduce congestion costs for motor carriers
- To ensure regulatory compliance and equitable treatment
- To improve customer service
 - Provide for electronic credentialing
 - Provide for electronic funds transfer
- Interoperability/compatibility of transponders
 - Compatible with other regions
 - Compatible with the national architecture

Midwest ITS/CVO Regional Mainstreaming Goals and Objectives

- To approach marketing to regional carriers on a regional basis
 - Provide seamless electronic credentialing to motor carriers on a regional basis
 - Assess and document benefits to carriers on a regional level
 - Focus marketing on regional initiatives that benefit regional carriers (electronic screening initiative)
- To use the Midwest ITS/CVO Mainstreaming consortium as an ongoing forum for the sharing of ITS/CVO ideas and experiences among states
 - Coordinate recruitment of additional states on a regional level
 - Develop a schedule for additional regional meetings beyond the formal Mainstreaming program
- To leverage ITS/CVO investments through shared resources or reciprocal access to data at the regional level
- To coordinate efforts with other Mainstreaming regions and the national ITS/CVO program on a regional level

PROGRAM SUMMARY

The ITS/CVO program has developed an architecture, is completing the definition of supporting standards, has prototyped critical system elements, and is conducting a model deployment program in 10 states. The next step is deployment to all interested states.

FHWA's CVISN Deployment Strategy

The FHWA has adopted a number of guidelines to be followed in implementing the ITS/CVISN deployment strategy. Relevant guidelines include:

- An anticipated \$25 million (25 percent of the ITS total) per year Deployment Incentive Funding would all go to states for ITS/CVISN and International Border Clearance Deployment Projects.
- Entire projects should be funded up-front so they can complete CVISN Level One deployment even if out-year ITS funding is not available.
- Funds should be obligated up-front, but disbursed incrementally in order to reward high achievers based on measured progress.
- The base level of funding to each state would be the same. An initial estimate of \$6–10 million (\$3–4 million federal, \$3–7 million state) per state to fund a three year deployment project will be used. The total cost may vary on a per state basis, depending on the size of the state, the scope of its CVO program, existing systems capabilities, use of off-the-shelf software, and other factors.

Definition of Level One Deployment

“CVISN Level One” capability refers to the following specific items:

- An organizational framework for cooperative system development has been established among state agencies and motor carriers.
- A state CVISN system design has been established that conforms to the CVISN Architecture and can evolve to include new technology and capabilities.
- Elements of three capability areas have been implemented using applicable architectural guidelines, operational concepts, and standards.

Safety Information Exchange

- ASPEN (or equivalent) at all major inspection sites
- Connection to SAFER
- CVIEW (or equivalent) for snapshot exchange within state and to other states

Credentials Administration

- End to End processing (i.e., carrier application, state application processing, payment, credentials, credential issuance) of at least IRP and IFTA credentials; ready to extend to other credentials (inter-state, titling, OS/OW, carrier registration)
- Connection to IRP and IFTA Clearinghouses
- At least 10 percent of the transaction volume handled electronically; ready to bring on more carriers as carriers sign up; ready to extend to branch offices where applicable

Electronic Screening

- Electronic screening implemented at a minimum of one fixed or mobile inspection site
- Ready to replicate at other sites

States will be able to deploy CVISN Level One using a process proven in early model deployments. Management and technical documentation will be available to serve as guides. Several information systems will be available from various vendors which may (with some modifications) meet the requirements of other states.

States which have completed at least two training courses will be eligible for a \$100,000 grant to proceed through a series of CVISN workshops. Each workshop in the series produces a draft product. These include a state top-level design, a state CVISN Project Plan, a state detailed Work Plan, and detailed designs. After completing the workshops, the participating states will have a CVISN Project Plan that can be submitted to the FHWA as a proposal for a CVISN Deployment Incentive grant. FHWA will fund selected proposals based on a predefined selection criterion and available funding.

Model Deployment states are on schedule to finish CVISN Level One deployment by the end of calendar year 1999. Successive groups of 4–7 states will be funded each year starting in FY2000 to begin their deployment programs. Funding is provided over three years to provide \$100,000 grant to any interested state to go through the CVISN workshop process and develop a proposal for a CVISN deployment project. An allocation of \$1.5 million per year for two years has been reserved to support deployment of several core infrastructure systems, including the IRP and IFTA Clearinghouses.

State Deployment Schedule and Incentive Funding

The bulk of the funding, \$97 million, over the six-year period goes to supporting deployment projects in up to 32 additional states.

The FHWA will use an open Request for Application (RFA), proposal evaluation, and award process to make ITS/CVO Deployment Incentive Grants to states. Any state that completes the CVISN Workshops can use this process to submit its CVISN project plan to the FHWA as a proposal for matching funds. Funding will be awarded based on a scoring algorithm that is a weighted checklist of criteria. It is anticipated that four to six states will be funded (at a 50 percent matching level) up to \$3–4 million federal (matching \$3–4 million state) per deployment state. States can resubmit each year.

The deployment strategy includes several elements aimed at increasing the likelihood that states will be in conformance. Training builds the professional capacity of the people involved to implement systems that conform to the CVISN Architecture.

The FHWA ITS/CVO course list is as follows:

Introduction to ITS/CVO	June 1998
ITS/CVO Technical Project Management for Nontechnical Managers	July 1998
Understanding ITS/CVO Technology Applications	November 1998

In addition to the FHWA training, the Center for Transportation Research and Education will develop and facilitate a series of seminars that will provide information on areas of interest or perceived need among the regional consortium participants. Using the Model System Architecture Diagram (included in Appendix 4a–c) as a guide, participants will prioritize their training needs. Seminars will be held in conjunction with quarterly meetings to minimize costs and inconvenience.

A CVISN Operational and Architectural Compatibility Handbook (COACH) is being prepared to provide a comprehensive set of checklists which can be used to evaluate whether plans, processes, and systems are in conformance. Plans describing the systems to be developed are written in sufficient technical detail to use the COACH to determine whether the plans will conform with the CVISN Architecture. Incremental builds of operational systems are submitted to conformance tests to determine if developed systems meet the minimum criteria to conform with the CVISN Architecture.

In addition, the FHWA published “Interim Guidance on Conformity with National ITS Architecture and Standards” in October 1998 (included

as Appendix 7). The objective of the document is to foster integration, encourage the incorporation of ITS into current transportation planning processes, and to focus on near-term ITS projects with the greatest potential for affecting regional integration. It is expected that a final policy will be developed through formal rulemaking.

Progress to Date

The Midwest Mainstreaming Consortium came into being in March 1997. For the first year, the immediate objectives of the consortium were

- To form cohesive interagency working groups within each state. A high level of participation in Midwest Mainstreaming quarterly meetings and prompt completion of state business plans are proof that these state working groups are functioning well.
- To develop state ITS/CVO business plans and a regional coordination plan. All four state working groups have completed their State ITS/CVO Business Plans and have submitted their plans to the FHWA.
- To familiarize the working groups with the issues and technologies that shape CVISN and ITS/CVO. The Midwest Mainstreaming quarterly meetings have been well attended. A variety of topics have been covered. CTRE, the regional champion, introduced ITS/CVO technologies and their potential applications for states. The second quarterly meeting included a progress report and demonstration of the SAFER system presented by Paul North, the SAFER project manager. The consortium members were also given a chance to tour the FHWA's Technology Truck.

Planned Activities for Midwest Mainstreaming Regional ITS/CVO Forum and Champion

The role of the champion is to coordinate Commercial Vehicle Information Systems and Networks (CVISN) and other ITS/CVO activities for the region. Through continued facilitation of quarterly meetings, the Regional champion will provide an ongoing forum for sharing ITS/CVO information among consortium members.

The Midwest Mainstreaming consortium will meet on a quarterly basis for the remainder of 1998. Beyond 1998, the frequency of meetings will be determined by consortium members. Frequency will depend on both the level of ITS/CVO activity within the region and perceived need for formal coordination. Ideally, the working groups will be gathering for participation at CVISN project planning workshops. The path to CVISN deployment is included as Appendix 5.

Regional coordination

Members of the Mainstreaming consortium will meet regularly after the completion of the state and regional coordination plans. Both the regional coordination plan and the individual state business plans will continue to be updated, amended, and expanded as ITS/CVO planning and implementation evolves.

Training

CTRE staff will conduct a series of ITS/CVO training sessions for consortium members. The training program has been developed by the Federal Highway Administration's Office of Motor Carriers. Training is scheduled to begin in June 1998.

With the reorganization of the Federal Highway Administration and the imminent closure of the FHWA Region Seven Office in Kansas City, the Midwest Mainstreaming consortium will become even more of a focal point for ITS/CVO activities. Division FHWA OMC staff have been very involved in the development of state business. The consortium will encourage their continued involvement through participation in the regional forums and the ITS/CVO training program.

Marketing

Marketing is woven into several of the Consortium's activities. The Midwest Mainstreaming website, which is maintained by the regional champion, provides information on ITS/CVO and the mainstreaming program. Through the website, individuals can learn about the FHWA's ITS/CVO program, read the state business plans, and check the status of the ITS/CVO projects within the region.

The executive summary of this Regional Coordination Plan is intended to be an introduction to both ITS/CVO and the plans of the Midwest Mainstreaming consortium. Consortium members will redistribute the document to decision makers within their organizations.

Finally the target audience of the first training courses, "Introduction to ITS/CVO" includes motor carrier industry representatives, legislative staff, budget and programming office staff, and information system staff as well as state agency staff directly involved in enforcement. This introductory course provides an excellent opportunity to get more people involved in the ITS/CVO mainstreaming program.

National coordination

As the regional champion, CTRE will facilitate the participation of Midwest Mainstreaming states in both the CVISN workshops and CVISN Conformance Assurance Process. CTRE will track deployment and document it in the Regional Coordination Plan.

Although participation, time lines and funding will be determined by each state individually, the Midwest Mainstreaming consortium members have agreed in principal to coordinate their efforts on the following initiatives.

Electronic Screening

Interoperability Agreement

At the Midwest Mainstreaming quarterly meeting held January 24, 1998, consortium members chose to endorse AASHTO's Policy Resolution PR 14-97 "Commercial Vehicle Electronic Screening Interoperability" (included as Appendix 1).

Electronic Screening Product and Service Review

Over the summer of 1998, representatives from Help Incorporated, Lockheed Martin, Transcore, International Road Dynamics, and Advantage CVO accepted invitations to present information on electronic screening business models and, for Transcore and International Road Dynamics, to describe their products and services. Through these presentations, the Midwest Mainstreaming Consortium develop a better understanding of current offerings and opportunities.

Regional Screening Program

Kansas, Nebraska, and Missouri, the Turnpike Authorities of Kansas and Oklahoma, representatives of the motor carrier associations in each state, and the Owner Operator Independent Drivers Association are in the process of creating a Memorandum of Understanding. The objective of the memorandum is to build upon the current and significant populations of transponder equipped vehicles in the region in the development of an electronic screening program.

Safety Assurance

Remote Enforcement Systems

State business plans suggest that these rural states are interested in enhancing remote enforcement capabilities. An upcoming regional meeting will be dedicated to exploring system design options and reviewing products currently on the market.

Credentials

Credentialing Website Development

All member states have expressed an interest in electronic credentialing. The consortium will explore the feasibility of developing a regional website as one medium for interacting with the motor carrier industry. Electronic Credentialing software and website development services will

Single-State Project Summary

be discussed at the quarterly meeting to be held August 13, 1998. Further action items will be developed at this time.

Automated Routing Systems

All states are interested in developing or purchasing automated routing systems to complement their overdimensional permitting processes. The states will explore the feasibility of developing a regional routing system.

Each state ITS/CVO working group defined the scope of a proposed ITS/CVO project differently. As a result, a project for one state would clearly fit in the category of task for another.

Model architectures have been completed for Kansas, Missouri, and Nebraska and are included in Appendix 4(a-c). These architectures illustrate both the components of proposed ITS/CVO systems and the relationships and modes of connection between the components.

Kansas

Safety Assurance

Improving the CVSA reporting process for MCSAP inspectors Provide equipment at MCI stations to allow for faster upload of CVSA inspections. This equipment will benefit both the inspector and MCI station personnel by providing access to CDLIS for driver license checks.

Remote weight/video monitoring systems Through the use of fixed weigh-in-motion scales, video monitoring and a paging system, a truck that trips the thresholds will be captured via the video monitor and a page will be sent to the nearest enforcement location for follow-up.

Specially equipped inspection sites Inspection sites will include paved pull-off areas, high speed weigh-in-motion, video monitoring, and cellular connectivity. These sites will be stand alone facilities located in remote areas of the state.

Annual program of compliance reviews Perform compliance reviews on all carriers which have received a written complaint. If the violations are serious enough in nature, proceed with a show-cause hearing and appropriate penalties, such as a fine and/or suspension of authority. If the violations are not serious, the violator shall be given a written cease-and-desist warning.

On all new Kansas-based intrastate common and contract motor carriers applying for operating authority, perform a compliance review and provide information about safety compliance.

Continue to perform compliance reviews on private motor carriers and interstate exempt motor carriers on a random basis, and issue show-cause orders to cease-and-desist when necessary.

Credential Administration

Join IRP Clearinghouse Programming is completed and implementation is under way. Joining the IRP Clearinghouse will provide groundwork to join the IFTA Clearinghouse in the future.

Electronic renewal/supplement processing As a follow up to the Midwest One-Stop Shop project, agencies will define requirements and develop software to allow for electronic renewal.

Electronic Heavy Vehicle Use Tax (HVUT) reporting IRP inc. is piloting a project that will allow states to provide electronic files to the Internal Revenue Service for verification of HVUT. Kansas looks forward to participating.

Streamline property tax and insurance verification This process improvement for credential renewal will benefit motor carriers and the taxpayer. It will allow for easier access to verify payments of property tax. Also, insurance verification process improvements for carriers that are not part of SSRS are being explored.

Document scanning Providing scanned images of documents that are currently available only in paper format will allow more areas direct access. Auditors and registration sections reside in different physical locations. Also, space limitations dictate that only current files are kept on the premises. Older files are placed in storage and have to be retrieved if needed. Providing online access to imaged files will improve record access for both sections.

"Apportioned" tags for trailers This administrative change will improve customer service by allowing carriers to register both trailers and power units in the same location and with the same registration time period. (Began November 1, 1997)

Provide optional mileage reporting for IRP registrations This project will redefine the methods and processes of mileage reporting, tie-ins with IFTA mileage reports, and expanding the renewal processing time.

Implement permanent trailer plate This proposal is being studied by industry and agency groups. Timeline and details have not been completed.

Register owner/operators This proposal is being studied by industry and agency groups. Timelines and details have not been completed.

Electronic Screening

Motor carrier inspection stations Evaluate and implement Automated Vehicle Clearance for the South Haven Station. South Haven will be used as the model project. If implementation is successful, Olathe, Kanorado, Wabaunsee, and Belleville locations will be evaluated and suitable electronic clearance technology will be installed.

Carrier Operations

Road and Weather Information Systems Kansas, along with the states of Colorado, Nebraska, Wyoming, and Utah, has developed a Road Weather Information Systems proposal. The consortium of states proposes to design, develop, operate, and evaluate an integrated system that meets highway operators' and users' needs for clear and accurate weather and road information, particularly in rural areas. Current road conditions would be available to motor carriers via kiosks at truck plazas and rest areas.

Outreach/Education Projects

Internet access Include the Traveling through Kansas booklet on the Internet, and provide links to a number of information sites.

FHWA technology truck The FHWA technology truck was displayed at the Kansas capitol grounds for April 7, 8, and 9, 1998. Tours were made available for legislators and other interested citizens.

Coordinate efforts between agencies Keeping motor carrier needs as a priority will be the focus of this effort. This project group will coordinate reengineering efforts between state agencies and the motor carriers. This effort includes sharing information at Kansas Motor Carrier Association conventions and area meetings.

Nebraska

Electronic Screening

Research equipment and technology Research the equipment and technology needed to accomplish electronic screening.

Work with weigh-in-motion (WIM) vendors to incorporate AVI technology By working with vendors, Nebraska personnel would be able to determine if existing computer systems could accommodate the planned electronic screening system.

Implement CVO electronic screening for mainline and ramp operations

Establish a plan and secure funding sources to deploy WIM and electronic screening at all volume fixed scale facilities and other key locations for use by portable units.

Safety Assurance

Connect to the State of Nebraska Frame Relay Wide Area Network for state-wide data exchange Connect all CVO agencies within the state through the Nebraska Frame Relay Wide Area Network (WAN) to facilitate data exchange.

Establish a database for intrastate carriers Create a database for Nebraska intrastate carriers to include the history of inspections, accidents, and citations for each individual carrier.

Establish selection system for intrastate carriers in need of a safety compliance audit Develop a system similar to that developed by the FHWA OMC. The system will identify intrastate motor carriers that have high Safety Compliance Enforcement (SCE) scores.

Establish software to track Intrastate USDOT Numbers Develop a system which will identify and track intrastate motor carriers by assigning each individual motor carrier a unique number.

Use developed software for intrastate compliance review Use software that recognizes, compiles, and interjects regulations into the formulas system, similar to the FHWA OMC.

Conduct complete intrastate compliance reviews Use developed systems, data, software, and programs to conduct complete in-depth intrastate compliance reviews.

Credentials Administration

Redefine duties and procedures in IRP Office Redefine employees' duties and procedures to optimize staff productivity. The introduction of the AS/400 Based IRP will potentially allow for more efficient work flow.

Develop and implement electronic data interchange within the IRP process Develop the capability to electronically send and receive registration applications for motor carriers, transfer registration invoices within Nebraska state agencies, and verify registration credentials.

Define software needs for connection to statewide systems Define the software and/or computer programming needed to connect new systems with the state's existing systems.

Participate in IRP workshop Continue to participate in and travel to IRP workshops to ensure compliance with the base state agreement.

Enhance the AS/400 motor carrier one-stop system Make changes based on evaluation of success and failures after major processing milestones, i.e. IRP renewal and IFTA quarterlies.

Organize a “staggered registration” task force The objective of staggered registration is to alleviate backlogs in the renewal process. The task force will be comprised of representatives from the Nebraska State Patrol, the Nebraska Department of Motor Vehicles, Central Data Processing (CDP), Nebraska Department of Roads, and the motor carrier industry.

Process the quarterly IFTA returns and distribute the funds As part of the final development of the Nebraska IFTA software application, the system will be brought up to production environment, problems will be identified, and changes made as needed.

Participate in IFTA workshops Continue to participate in IFTA workshops to ensure compliance with the base state agreement.

Develop and implement electronic data interchange (EDI) methods for IFTA functions Develop the capability to electronically send and receive registration applications for motor carriers, and to receive, process, send, and transfer fuel tax credential data and verify fuel tax credentials.

Develop and implement EDI methods for financial responsibility information and registration Receive and collect interstate registration and financial responsibility information from motor carriers and their insurance companies electronically.

Establish communication networks to receive and transmit financial responsibility and registration data The objective is to link federal and state databases and to provide easy access to enforcement and regulatory agencies.

Automate the Overdimension permitting process Use state of the art communication and information technology to enhance the overdimension permitting process.

Develop an automated routing system Reduce the amount of manual processing currently needed to provide overdimension permit applicants with approved routes.

Pursue opportunities for participation in multi-state permit programs

Establish communication networks to transmit permit status to Nebraska State Patrol Provide current permit status to weight enforcement officers.

Missouri

Electronic Screening

Implement mainline screening at a fixed weigh station on Interstate 44 Install radio frequency (RF) readers at a SHRP site near a fixed weigh station located on an eastbound lane on Interstate 44 in Newton County near

Joplin, Missouri. The roadside readers will be connected to a local area network (LAN) located at the fixed weigh station. Current data on IRP, IFTA, SSRS, Financial Responsibility, OS/OW permit status, Missouri Special Fuel User Tax, accident history, and safety ratings will be used to determine compliance for pre-clearance. The AVI system will be capable of reading all transponders presently being used in the ITS/CVO arena.

Implement mainline screening at a fixed weigh station on Interstate 70 Fixed weigh stations located on the eastbound and westbound sides of Interstate 70 in St. Charles County, near Foristell, will be upgraded with transponder readers and mainline weigh-in-motion scales. The roadside reader will be connected to a LAN server located at the fixed weigh station.

Construct new weigh stations on Interstate 70 The eastbound and westbound weigh stations on Interstate 70 in Lafayette County west of Odessa will be replaced by new facilities east of Odessa. Mainline screening, ramp WIM scale and sorter, lane control signals, and inspection buildings will be constructed. The weigh station will be similar to the new weigh station at Foristell, Missouri.

Implement mainline screening at two fixed weigh stations Fixed weigh stations located on the northbound and southbound lanes of Interstate 29 in Atchison County, near Watson, Missouri and in the northbound and southbound lanes of Interstate 35 in Harrison County, near Eagleville, Missouri, will be updated with AVI systems and mainline WIM scales.

Upgrade seven weigh stations Seven weigh stations will be retrofitted to include mainline screening, ramp weigh-in-motion scales and sorters, lane control signals, scale buildings, and paved parking areas.

Credential Administration

Participation in a multi-state permit program The Missouri Department of Transportation joined the Southeast Association of State Highway and Transportation Officials (SASHTO) multi-state permit program in September 1997. Missouri committed to participate contingent on the program being included in its revised administrative rules. Participation includes the issuance of multi-state permits by the latter part of calendar year 1998.

Safety Assurance

Wireless mobile enforcement data systems and computer aided dispatch systems The mobile enforcement data systems will allow the commercial vehicle enforcement's mobile units the capability to generate electronic driver/vehicle examination reports, uniform complaint summons, accident reports, warnings, and officer daily reports. All can be downloaded to the Missouri State Highway Patrol mainframe computer and uploaded to

SAFETYNET. A computer aided dispatch system will be used to both dispatch enforcement personnel to an incident and automatically alert enforcement teams located in the vicinity of the weigh station when a commercial vehicle fails to pull into a weigh station when directed to do so by transponder.

South Dakota

Carrier Operations

Proactive information dissemination Weather, road conditions, and construction information are currently disseminated to motor carriers and other motorists by several media. This information helps carriers operate safely and efficiently. Delivery of educational information regarding CVO agency resources, regulatory procedures, and compliance is planned. Carriers that were interviewed in the business planning process indicated that information like this would increase their ability to comply with regulations. In addition, customer services will be enhanced.

Information helpline Provide motor carriers with a single point of contact in state government for answering questions regarding CVO regulations.

Credentials Administration

CVO database architecture A plan for linking the CVO databases will be developed in this project. The actual linking of databases will occur incrementally as other ITS/CVO projects are implemented and new systems are installed. Linked databases will result in more efficient and cost-effective administrative processes as agencies share information with one another and motor carriers are not required to provide the same information to multiple agencies. Currently, most of the CVO agencies cannot share information with one another, and agencies often collect the same data from motor carriers. The agency representatives who were interviewed in the business planning process expressed strongly their desire to receive and share data.

Automated routing and permitting Implement an automated routing and permitting system for oversize and overweight vehicles. Automated routing and permitting will improve the routing of OS/OW vehicles resulting in safer operations, and it will improve the management of permit operations resulting in greater agency productivity. It will also enable optional electronic permit applications by motor carriers that will reduce the time needed to apply for permits and enable them to receive permits at convenient locations. Permitting is currently a manual process. Permit information is recorded by hand, and permit guidelines, highway information, and complex manual procedures are used to verify routes. Routing errors sometimes occur. Staff time required for this process is considerable. The cost/benefit analysis performed for the South Dakota

Department of Transportation in 1997 calculated a benefit to cost ratio of 1.58, indicating that an automated routing and permitting system will save the state a considerable amount of money each year, approximately \$111,000. Because the system will also provide carriers greater flexibility in applying for and receiving permits, resulting in time savings, it is likely to provide a similarly positive benefit/cost ratio to carriers.

Implement electronic one-stop shop South Dakota will be searching for alternative software, or designing a system that would be simple for the state and industry to use. In addition to implementing one-stop shop for interstate operations, MCRS will implement electronic renewal of credentials and electronic filing of proof of insurance for intrastate operations.

Two-dimensional bar coding Use two-dimensional bar codes to provide quick retrieval of vehicle, carrier, and driver information. Selected information will be translated into a two-dimensional bar code format and printed on a credential or driver's license.

Safety Assurance

Roadside data transfer Use cellular modems to enable timely roadside data transfer. Cellular modems have the potential to provide fast and reliable data exchange between the roadside and deskside resulting in improved enforcement of regulations. Cellular modems will be deployed with laptop computers equipped with electronic data entry capability. Electronic data entry and cellular transmission will replace the current paper-based reporting process and speed up the process of uploading safety information to the SAFETYNET thereby providing more timely data for use by the Highway Patrol, enforcement agencies in other states, and the FHWA.

Linking registration to safety performance Unsafe motor carriers will be identified and entered into safety improvement programs resulting in improved motor carrier operations and generally improved highway safety. Developing an information system and a process of sanctions or limitations on operations will help ensure that a carrier is operating safely. This project is also known as PRISM.

Electronic Screening

Automated Vehicle Identification AVI technology will determine the state of registration and plate number for commercial vehicles passing through a weigh station. It will enable focused enforcement on high-risk carriers resulting in improved highway safety. AVI is an essential part of linking registration to safety performance.

Safety data access Roadside enforcement personnel will use laptop computers to access motor carrier safety and driver's license data. An improved

method is needed for officers to quickly and reliably access information in order to target inspections on carriers with unknown or poor safety records.

Electronic credentialing Motor carriers will apply for, pay for, and receive credentials electronically from their office or other locations or through third-party service providers. This has the potential of reducing the costs of doing business for both the agencies and carriers.

Weigh-in-motion Commercial vehicles will be weighed automatically on the approach ramp to a port of entry, and, at the discretion of facility personnel may be allowed to bypass the static weighing process, thereby reducing delays for compliant vehicles. Currently, all vehicles must be weighed on the static scale at a facility.

APPENDIX 1:
AASHTO's Interoperability Resolution

AASHTO's Interoperability Resolution

As approved by the AASHTO Board of Directors on November 16, 1997

POLICY RESOLUTION PR-14-97

TITLE: COMMERCIAL VEHICLE ELECTRONIC SCREENING INTEROPERABILITY

WHEREAS, the American Association of State Highway and Transportation Officials (AASHTO) has a long history of leadership in issues dealing with commercial vehicle operations (CVO); and

WHEREAS, many AASHTO member states have long relied on Weigh Stations/Ports of Entry (WS/POE) screening systems to ensure the safe and legal operations of commercial motor vehicles, and a number of other states are now developing new fixed and mobile electronic screening systems for safety, CVO credentials, size and weight, toll collection, and other functions; and

WHEREAS, a number of AASHTO member states have assumed national leadership roles in the development of Intelligent Transportation Systems (ITS) for CVO; and

WHEREAS, a number of AASHTO member states have shown their ability to plan, develop and operate electronic screening systems in the preclearance of safe and legal vehicles and in electronic toll collection with increased efficiency benefits to both the states and the motor carrier industry; and

WHEREAS, the use of fixed and mobile site screening systems is rapidly expanding, and a variety of electronic screening systems have been implemented or proposed within the United States; and

WHEREAS, a significant part of the motor carrier industry is an interstate activity requiring coordination between states.

NOW, THEREFORE, BE IT RESOLVED that AASHTO states as its policy, and urges its individual members to concur, that interoperability between CVO electronic screening systems is essential for effective management of CVO systems; and

BE IT FURTHER RESOLVED that AASHTO adopts, and urges participating states to collectively and individually adopt, the following principles of CVO electronic screening and interoperability:

- 1) Ongoing motor carrier participation privileges shall be predicated upon successfully meeting specific preclearance criteria established by the respective states, or by a consortium of states which, at a minimum, will include but not limited to safety, current registration and other credentialing requirements, payment of all highway use tax and toll obligations, and maintenance of acceptable liability insurance, where applicable.
- 2) Enrolled carriers will be subject to at least quarterly review by each state/system to verify that the carriers continue to meet the enrollment criteria.
- 3) Electronic screening and passage at fixed and mobile sites will be contingent upon enrollment of the carrier, and meeting all requirements established by the state or consortium of states.
- 4) All states/systems commit to the concept of a single transponder. Motor carriers may initially obtain a transponder from the system operator or equipment vendor of their choice that

meets the ITS CVO interoperability standards. If a motor carrier enrolls in one system and chooses to participate in another state/consortium system, the original enlisting jurisdiction will convey the unique electronic screening system identification (ID) codes to the second screening systems upon written authorization from the motor carrier. No state/system will be required to grant screening privileges to vehicles that do not meet their enrollment criteria, nor to read and retain the electronic screening ID codes from vehicles belonging to any motor carriers who have not chosen to participate in their screening system.

- 5) Each state/system will make its own independent determination of the specific uses, if any at all, for which the electronic screening event data will be used in supporting regulatory and/or enforcement responsibility within their state system. State/systems will publish and disclose their individual policy in their regard. Motor carriers will have the option to participate in the program available in each state/system.
- 6) Each state/system will determine the individual pricing rates, if any, for electronic screening program and activities (e.g. enrollment, transponders, events, data exchange, etc.) transpiring within their boundaries. States/systems will publish and disclose such pricing arrangements where such exist. Motor carriers will have the option of participating in the electronic screening programs available in each state/system.
- 7) Each state/system commits to work with all other electronic screening systems, particularly in regards to principles (4), (5) and (6), so as to create only one needed point of contact for each motor carrier, and ensure the concept of interoperable systems.
- 8) Each state/system supports the Commercial Vehicle Information Systems and Networks (CVISN) concept and its efforts to develop an open national information system architecture and data exchange standards.

BE IT FURTHER RESOLVED that AASHTO urges its member states, individually and collectively, to use all available forums to ensure the necessary details are developed to implement the above eight (8) principles; and

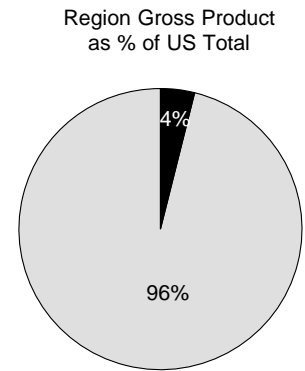
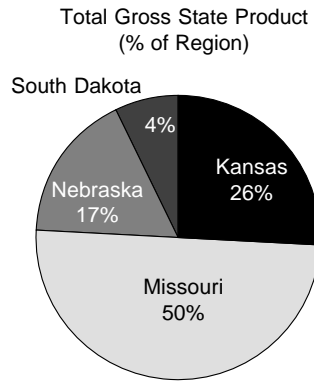
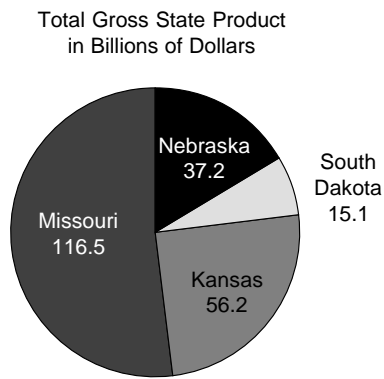
BE IT FURTHER RESOLVED that AASHTO supports and adopts the concept of national interoperability for electronic screening systems, and the architecture for open national information systems based on interoperable hardware and software standards.

APPENDIX 2 (A–B):

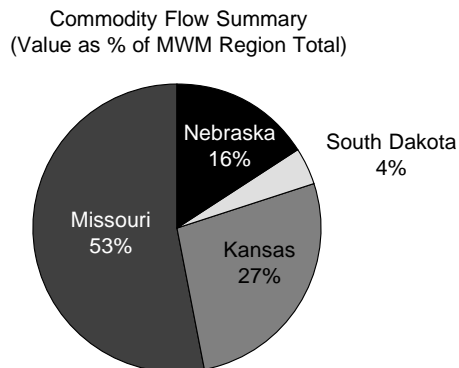
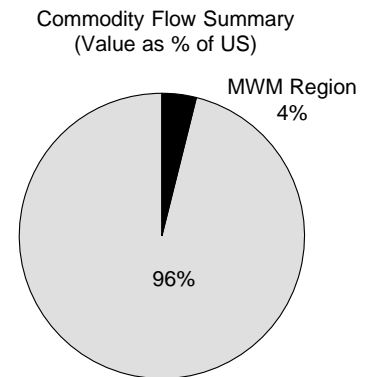
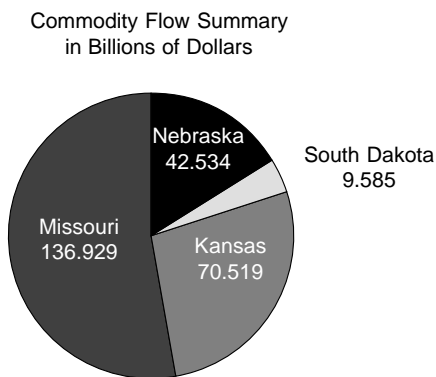
Graphs and Tables

An Overview of the Midwestern States' Commodity Flow, Highway Network, and Motor Carrier Registration

The US Bureau of Economic Analysis, in its most recent "Survey of Current Business" report, estimates that Kansas, Missouri, Nebraska, and South Dakota have a gross "regional" product of \$220.1 billion. This figure represents 3.67 percent of the United States gross domestic product. The details of the individual gross state product (value in billions of dollars and percent of Midwest Mainstreaming region total [MWM]) are shown in the charts below. ²

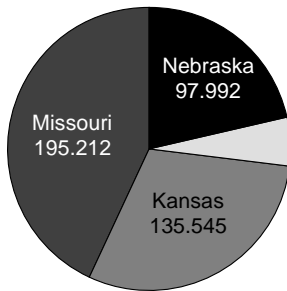


The four states produced commodities with a total value of \$260 billion, which was 4.44 percent of the national total of \$5.85 trillion (1993 Commodity Flow Survey).



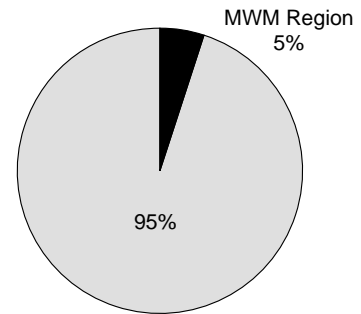
The total weight of these commodities was 454 million tons, 4.69 percent of the US total of 9.7 billion tons in 1993.

Commodity Flow Summary
(Million Tons)

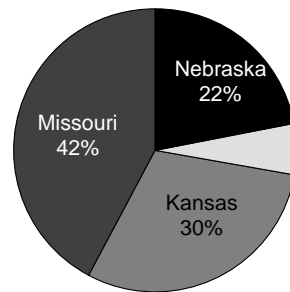


South
Dakota
25.16

Commodity Flow Summary
(Tons as % of US Total)



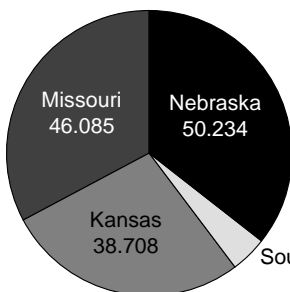
Commodity Flow Summary
(Tons as % of MWM Region Total)



South
Dakota
6%

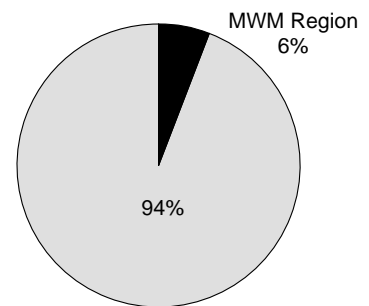
These commodities covered 1.41 billion ton-miles, 5.83 percent of the US total of 2.42 trillion in the same period. These figures are depicted in the charts below.

Commodity Flow Summary
(Ton-miles in Billions)

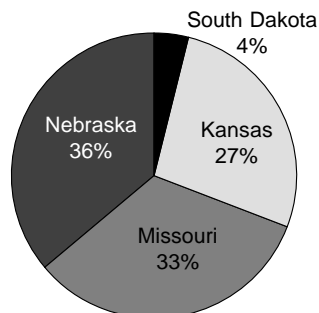


South
Dakota
6.132

Commodity Flow Summary
(Ton-miles as % of US Total)



Commodity Flow Summary
(Ton-miles as % of MWM Region Total)



Commodity Movement by Trucks

Of the commodities originating in the region, 76.98 percent of the **total value** was transported by truck. This was modestly higher than the national average of 75.3 percent. The percentage of **tons** was 74 percent compared to the national average of 65 percent. The 39.8 percent **ton-miles** traveled compared to the national average of 36 percent. The details of the state figures are in the table of commodity movement by trucks in Appendix 2(d).

Destination of the Commodity

The information on the destination of the commodity is drawn from the classification data reported by the United States Census Bureau. *Region*, classified in the Commodity Flow Survey as West North Central, includes the four states of the consortium together with Iowa, Minnesota, and North Dakota.

In terms of **dollar value**, 48.53 percent of commodities have both origins and destinations within the region. In terms of **tonnage**, 70.18 percent of the commodities originating within the region remained within it. In terms of **ton-miles**, 21.73 percent of the commodities originating within the region remained within it.

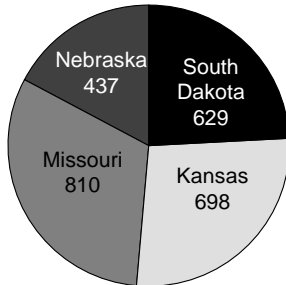
The figures for the individual states can be seen in the table of destination of the commodity in appendix 2(e). The most telling are **percent tons**. Kansas sends 67.5, Missouri 70.4, Nebraska 64.1, and South Dakota 78.7 of the commodities to destinations **within** the region. While regional, most commerce is interstate. For the four states in the region, commodities that passed through, neither originating nor terminating within the state, accounted for more than 50 percent of the commodity flow.

These figures emphasize the importance of regional coordination. Success of the Mainstreaming program and, ultimately, successful deployment of ITS/CVO technology within the four member states depends on the support of the motor carrier industry, which operates predominantly on a regional basis. Through regional coordination, the consortium can consider state requirements from the perspective of the motor carrier. Also, because the majority of the commodities is interstate rather than intrastate, electronic screening processing requirements is most efficiently set at the truckshed level.

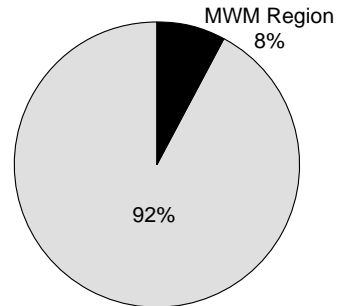
The Highway Network

Within the four states, 2,574 miles of interstate highway and 11,487 miles of other principal arterial roads are classified as rural. This information is depicted in the charts below.

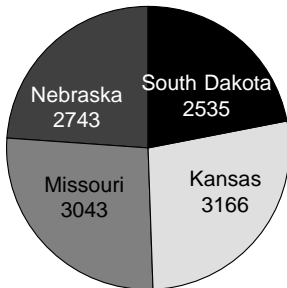
Rural Interstate Miles



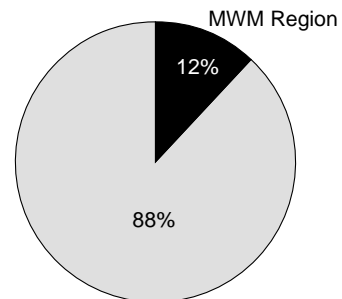
Rural Interstate Miles
(% of US Total)



Rural "Other Principal Arterial" Miles

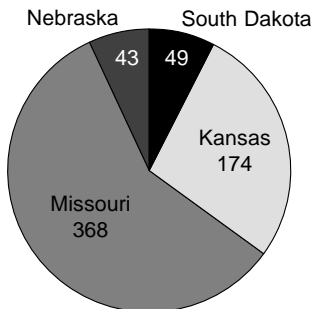


Rural "Other Principal Arterial" Miles
(% of &S Total)

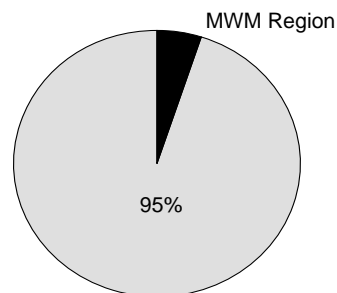


The urban networks had an estimated total of 634 miles of interstate moved by trucks highway and 410 miles of other freeways and expressways; 4.82 percent and 5.05 percent respectively of the national totals. The information follows in the charts below.

Urban Interstate Miles



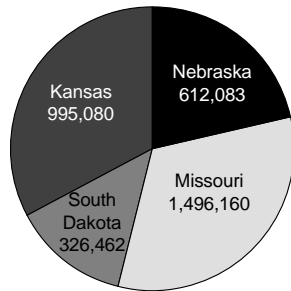
Urban Interstate Miles



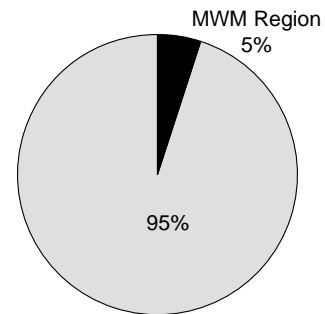
Motor Vehicle Registrations (1995)

Commercial vehicles include both trucks and buses. According to the U.S. Department of Transportation Highway Statistics report of 1995, the number of trucks registered in the period was 3,368,232 private and 61,553 public respectively. The regional trucks total of 3,429,785 was 5.29 percent of the national total. This is depicted in the charts below.

Total No. of Private and Public Registered Trucks in MWM Region (1995)

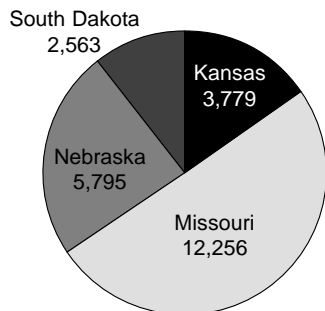


Total No. of Registered Trucks (% of US total, 1995)

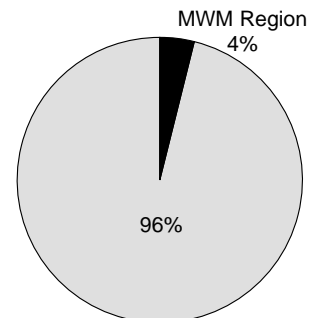


There were 7,985 private and 16,408 public buses registered within the Midwest Mainstreaming region. The total number of buses for the region, 24,393, was 3.56 percent of the national total shown in the charts below.

Total No. of Private and Public Registered Buses in MWM Region (1995)

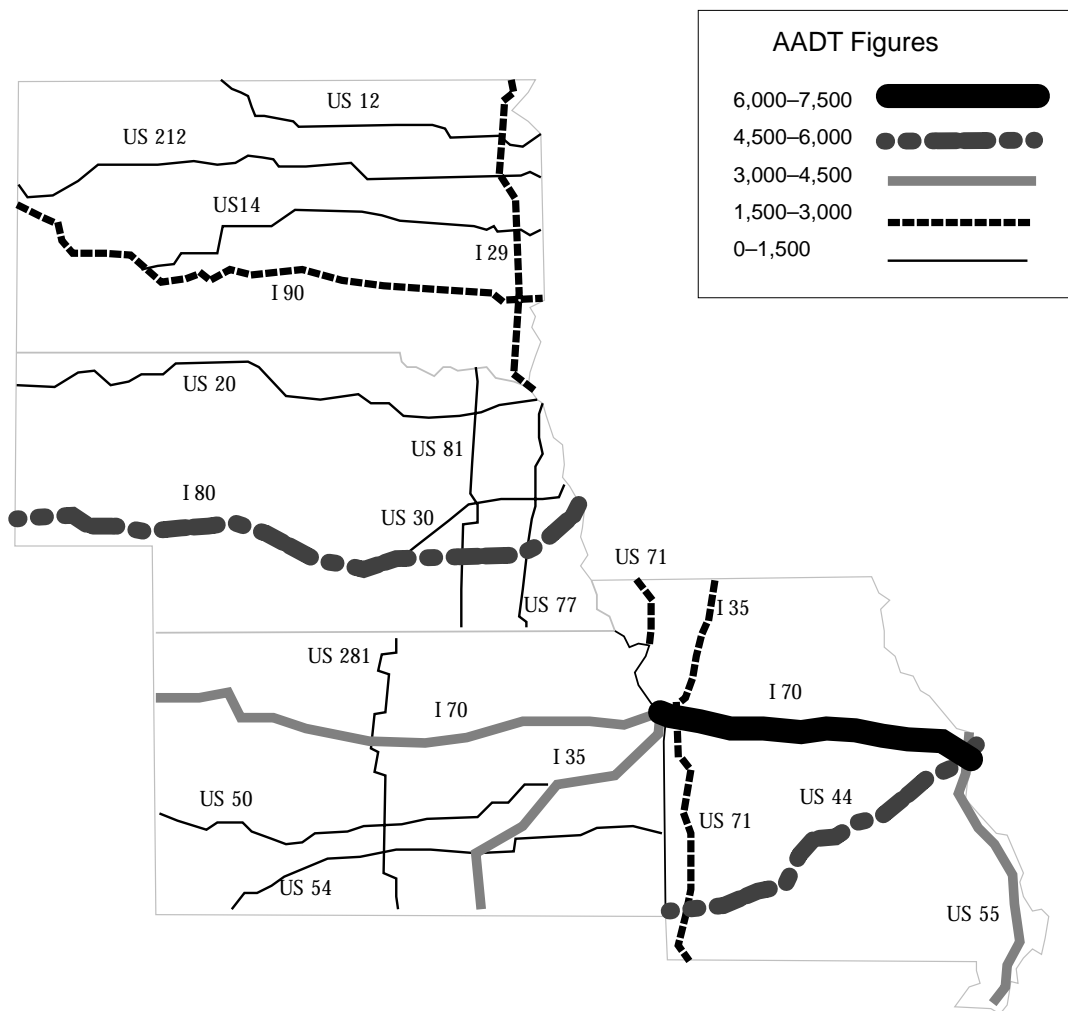


Total No. of Registered Buses (as % of US Total, 1995)



The map below shows the annual average daily traffic figures for heavy commercial vehicles in the region.

Annual Average Daily Traffic for Heavy Commercial Vehicles:
The Five Most Traveled Routes in Each State



a) Table of Gross State Product (in billions)¹

	Kansas	Missouri	Nebraska	South Dakota	Region	United States
Current Dollars (1992)	56.2	111.6	37.2	15.1	220.1	5,994.1
% Of US	.94	1.86	.62	.25	3.67	100
Constant Dollars (1987)	47.1	93.6	31.6	12.7	185	5,001.4
% Of US	.94	1.87	.63	.25	3.7	100

b) Table of Commodity Flow summary for the region as a proportion of the national total²

	Kansas	Missouri	Nebraska	South Dakota	Region Total	U. S. Total
Value (\$ million)	70,519	136,929	42,534	9,585	259,567	5,846,334
% of US Total	1.21	2.34	.73	.16	4.44	100
Tons (000's)	135,545	195,212	97,992	25,160	453,909	9,688,493
% of US Total	1.4	2.01	1.01	.26	4.69	100
Ton-Miles (millions)	38,708	46,085	50,324	6,132	141,249	2,420,915
% of US Total	1.6	1.9	2.08	.25	5.83	100

c) Table of Commodity Flow Summary for the Consortium member states³

	Value (\$ Million)	Value (%)	Tons (000's)	Tons (%)	Ton-miles (Million)	Ton-miles (%)
Kansas	70,519	27.18	135,545	29.86	38,708	27.4
Missouri	136,929	52.75	195,212	43.01	46,085	32.63
Nebraska	42,534	16.39	97,992	21.59	50,234	35.63
South Dakota	9,585	3.69	25,160	5.54	6,132	4.34
Total	259,567	100.01	453,909	100.00	141,249	100.00

d) Table of commodity movement by trucks (aggregate of for hire trucks, private trucks, and both)⁴

	Kansas	Missouri	Nebraska	South Dakota	Region Average	US Average
Value (%)	75	72.5	80.3	80.1	76.98	75.32
Tons (%)	71.4	79.4	65.6	79.6	74	65.9
Ton-Miles (%)	39.6	43.6	21.1	54.9	39.8	35.92

e) Table of destination of commodity⁵

		Kansas	Missouri	Nebraska	South Dakota	Average
Value (%)	Region	42.3	39.1	46.6	66.1	48.53
	Other	53.3	54.6	53.3	33.6	48.7
	Total	95.6	93.7	99.9	99.7	97.23
Tons (%)	Region	67.5	70.4	64.1	78.7	70.18
	Other	32.2	29.4	29.6	13.1	26.08
	Total	99.7	99.8	93.7	91.8	96.25
Ton-Miles (%)	Region	20.4	13.8	10.5	42.2	21.73
	Other	76.5	83.5	74.4	49.4	70.95
	Total	96.9	97.3	84.9	91.6	92.68

Key to the table:

Region: classified in the Commodity Flow Survey as West North Central. The states in the region include Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota and South Dakota.

Other: all the other states.

f) Table of State Highway Agency-Administered Roads and Highways 1995⁶; Estimated miles by functional system

Rural

	Kansas	Missouri	Nebraska	South Dakota	Region	US
Interstate (Miles)	698	810	437	629	2574	32,580
% of US Total	2.14	2.49	1.34	1.93	7.9	100
Other Principal Arterial (Miles)	3,166	3,043	2,743	2,535	11,487	96,833
% of US Total	3.27	3.14	2.83	2.62	11.86	100

Urban

	Kansas	Missouri	Nebraska	South Dakota	Region	US
Interstate (Miles)	174	368	43	49	634	13,164
% of US Total	1.32	2.8	.33	.37	4.82	100
Other Freeways & Expressways (Miles)	120	273	17	-	410	8,121
% of US Total	1.48	3.36	.2	-	5.05	100

g) State Motor Vehicle Registrations (1995)⁷

Buses

	Kansas	Missouri	Nebraska	South Dakota	Region	United States
Private	1,534	4,597	1,141	713	7,985	287,873
% Of US	.53	1.6	.39	.25	2.77	100
Public	2,245	7,659	4,654	1,850	16,408	397,631
% Of US	.57	1.93	1.17	.46	4.13	100
Total	3,779	12,256	5,795	2,563	24,393	685,504
% Of US	.55	1.79	.85	.37	3.56	100

Trucks

	Kansas	Missouri	Nebraska	South Dakota	Region	United States
Private	977,595	1,479,887	596,464	314,286	3,368,232	62,850,115
% Of US	1.55	2.36	.95	.5	5.36	100
Public	17,485	16,273	15,619	12,176	61,553	1,928,357
% Of US	.91	.84	.81	.63	3.19	100
Total	995,080	1,496,160	612,083	326,462	3,429,785	64,778,472
% Of US	1.54	2.31	.94	.5	5.29	100

¹ US Bureau of Economic Analysis, Survey of Current Business, May 1995

² Commodity Flow Survey, 1993, United States Census Bureau

³ Commodity Flow Survey, 1993, United States Census Bureau

⁴ Commodity Flow Survey, 1993, United States Census Bureau

⁵ Commodity Flow Survey, 1993, United States Census Bureau

⁶ Highway Statistics 1995, U.S. Department of Transportation, Federal Highway Administration

⁷ Highway Statistics 1995, U.S. Department of Transportation, Federal Highway Administration

Appendix 3:

Midwest Mainstreaming Directory of Participants

Midwest Mainstreaming Directory of Participants

FHWA

Steve Keppler ITS/CVO **Bob Thomas** Missouri **Bill Herster** OMC: R-7 **Alan Brown** OMC R-8 **John Carkin** OMC: R-7 **Mark Gilmore** South Dakota **Charles Langloss** State Director OMC-Nebraska **Elyse Mueller** Team Leader Nebraska **Randy Beaver** State Programs Specialist- Kansas **Bill Honan** Safety Specialist Iowa

Kansas

Leroy Butler Education Committee ITS/CVO **Ken Gudenkauf** Primary ITS/CVO Leader **Trudy Racine** State Budget Leader-DOT **Al Gerstner** IRP/Permitting **Brian Hughes** DCS Systems, Inc. **Larry Ochs** Roadside Enforcement **Tony Stewart** Motor Carrier Inspection **Vernon Wenger** Safety/Service **Mike Kelley** Kansas Motor Carriers **Judy Whitney** Registration/IRP **Deann Williams** Motor Carriers **Marty R. Wiltse** Turnpike Authority

Missouri

Rod Massman Highway Reciprocity Commission **Darrell Maples** Highway Reciprocity Commission **Bill Wilson** Primary ITS/CVO Leader **Jimmie Plumb** ITS/CVO Leader Alternate **Bob McFadden** OS/OW Information Systems **Captain Larry Buschjost** Commercial Vehicle Enforcement (CVE) **Gary Steinmetz** (CVE) **Steve Waters** Operating Authority (OA) **Barb Hague** DED–Motor Carrier and Railroad Safety Division (MCRS) **Ben Goodin** MCRS **Chris Burris** Missouri Motor Carriers

Nebraska

Jim Pearson/Ron Kontos Oversize/Overweight **Al Abrahamson** (EC) **Cathy Beedle** (EC) **Joe Botsford** Primary ITS/CVO Leader **Keith Dey** Information Systems Manager **Steven Groshans** (NSP) **Doug Donscheski** (NSP)

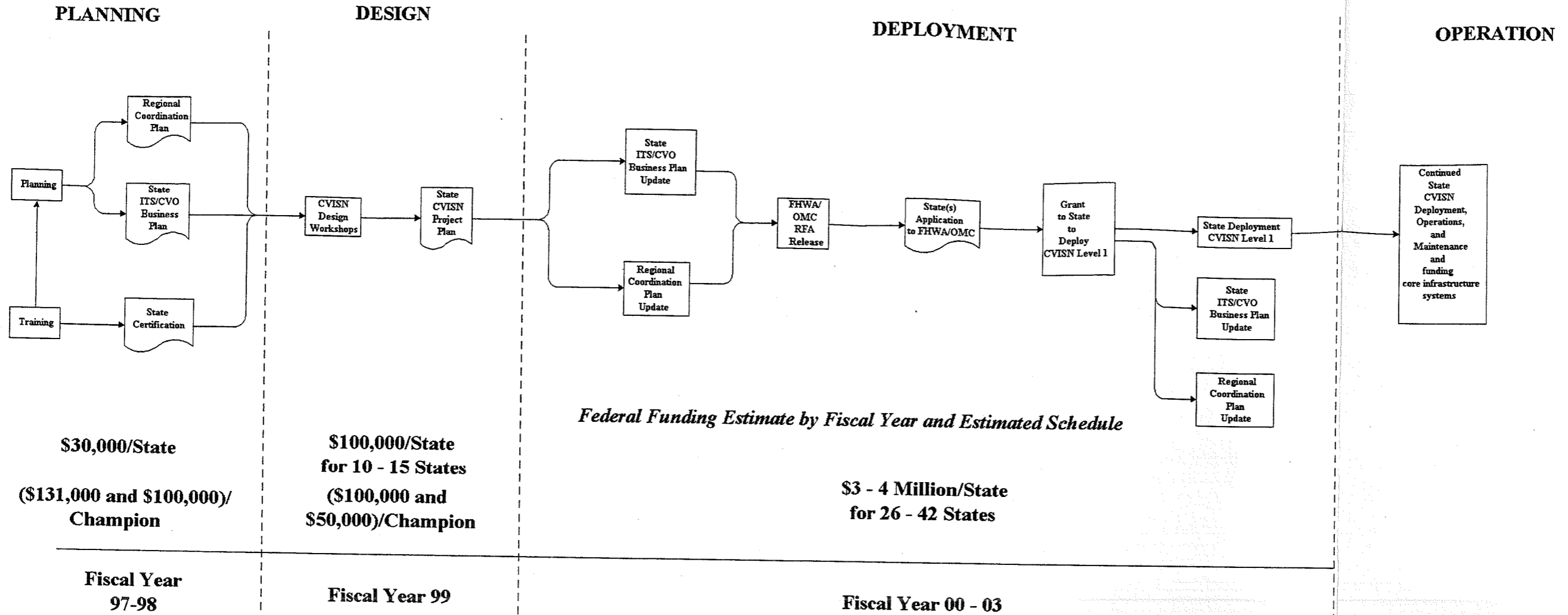
South Dakota

David Huft Primary ITS/CVO Leader **Capt. Myron Rau** Highway Patrol **Michael Young** SDDOT **Hal Rumpga** SDDOT **Debra Hillmer** Dept. of Revenue **Lisa Hull** DOR **Cindy Gerber** Dept. of Commerce **Carrie Jacobson** Dept. of Environment and Natural Resources **Marie Rumpga** Bureau of Information and Telecommunications **Ed Anderson** Public Utilities Commission **Kate Hartford** PUC **Mark Holmes** FHWA **Jill Smith** Unified Judicial System **Barb Lindstrom** South Dakota Trucking Assoc. **Larry Thurry** Midwest Coast Transport Inc. **Darwin Kurtenbach** Dept. of Agriculture **Ray Walz** Universal Transport

**APPENDIX 4(A-C):
Draft Model Architecture
for Providing Commercial Vehicle Operations Service Work Plans**

APPENDIX 5:
Midwest ITS/CVO Mainstreaming Path
to CVISN Deployment and Operation Work Sheet

Midwest ITS/CVO Mainstreaming Path to CVISN Deployment and Operation Work Sheet



Planning							
State Business Plan Dev. & Update							
Regional Coordination Plan Dev. & Update							
Integrate ITS/CVO into state processes							
Recruit additional states							
Training							
Introduction to ITS/CVO							
ITS/CVO Technical Manager Skills							
SAFER							
Understanding ITS/CVO Technologies							
Roadside							
Deskside							
Telecommunications							
Core Infrastructure							
State Meetings							
Regional Meetings							
National Meetings							
Design							
CVISN Design Workshops							
State CVISN Project Plan							
Deployment							
States App. for Deployment Incentive							
States CVISN Level 1 Deployment							
Conduct Conformance Assurance Process							
Deployment Tracking							

APPENDIX 6:
State by State Timeline

Task Name	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012			
	'94	'95	'96	'97	'98	'99	'00	'01	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12			
NEBRASKA																						
Weigh Stations & Motor Carrier Enforcement			1/1				12/31															
Intrastate Motor Carrier Safety Compliance	1/2																				9/29	
Financial Responsibility					7/1			6/29														
International Fuel Tax Agreement			1/1				12/28															
International Registration Plan			1/1				12/28															
Oversize/Overweight			1/1				12/28															
Midwest Electronic One Stop Shopping	10/4				12/29																	
MISSOURI																						
Mainline Screening - Interstate 44 Site			1/1											1/4								
Mainline Screening - Interstate 70 Site			1/1											1/3								
New Weigh Station - Interstate 70 Site			1/1											1/2								
Mainline Screening - 2 Fixed			1/1																		1/3	

Appendix 6

Task Name	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012		
	'94	'95	'96	'97	'98	'99	'00	'01	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12		
Rehabilitate 7 Weigh Stations			1/1	[Bar spanning from 1997 to 2012]																1/3	
SASHTO - Multistate permits			1/1	[Bar from 1997 to 1998]		12/30															
Mobile Enforcement Data and Computer-aided Dispatch Systems			1/1	[Bar from 1997 to 1999]					12/28												
Midwest Electronic One Stop Shopping	10/4	[Bar from 1995 to 1997]			12/29																
SOUTH DAKOTA																					
Proactive Information Dissemination				1/1	[Bar from 1998 to 1998]		12/30														
CVO Database Architecture				2/2	[Bar from 1998 to 1998]		5/22														
Automated Routing and Permitting				2/2	[Bar from 1998 to 1999]					7/28											
Roadside Data Transfer				2/2	[Bar from 1998 to 1999]				10/29												
2-D Bar Coding				4/1	[Bar from 1998 to 2004]										3/30						
Automated Inspection, Citation, and Accident Reporting				4/1	[Bar from 1998 to 1998]			3/30													
Linking Registration to Safety Performance				4/1	[Bar from 1998 to 1999]					9/26											
Information Helpline				9/1	[Bar from 1998 to 1998]			8/30													

Appendix 6

Task Name	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	
	'94	'95	'96	'97	'98	'99	'00	'01	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12	
Automatic Vehicle Identification					12/1		11/29													
Safety Data Access						9/1		8/29												
Electronic Credentialing						9/1		8/28												
Weigh-In-Motion				1/1																
Midwest Electronic One Stop Shopping	10/4				12/29															
KANSAS																				
Data Sharing				1/1																
Process Change				1/1				12/28												
Electronic Screening				1/1																
Mobile Enforcement						1/1														
Safety																				
Outreach and Education																				
Midwest Electronic One Stop Shopping	10/4				12/29															

APPENDIX 7:
**Interim Guidance on Conformity with the
National ITS Architecture and Standards**

Interim Guidance on Conformity with the National ITS Architecture and Standards

INFORMATION: Interim Guidance on Conformity with
the National ITS Architecture and Standards
Federal Highway Administrator
Federal Transit Administrator

October 2, 1998

HVH-1

FHWA Division Administrators
FTA Regional Administrators
FHWA\OMC State Directors

Section 5206(e) of the Transportation Equity Act for the 21st Century (TEA-21) requires that Intelligent Transportation Systems (ITS) projects using funds from the Highway Trust Fund (including the Mass Transit Account) conform to the National ITS Architecture and standards. To begin the process of implementing this legislative requirement, the U.S. Department of Transportation (DOT) has developed the attached Interim Guidance (which includes sections on definitions, questions and answers, and statutory language).

The Interim Guidance reflects input received from Federal, State, local, and private sector transportation stakeholders in conjunction with national transportation association forums and

10 outreach sessions held across the Nation this spring. The intent of the Interim Guidance is to:

- foster integration,
- encourage the incorporation of ITS into the transportation planning process, and
- focus on near-term ITS projects with the greatest potential for affecting regional integration.

The Interim Guidance is effective immediately, and is expected to be in effect for approximately 1 year. During this period, it is anticipated that a final policy will be developed through formal rulemaking. Therefore, Interim Guidance is the first step of a phased approach for implementing the TEA-21 conformity provision.

To support U.S. DOT field staff with implementation of the Interim Guidance, a Resource Guide has been prepared that includes the Interim Guidance, background material on the National ITS Architecture and Standards, benefits of using the National ITS Architecture, ITS and Commercial Vehicle Operations, and additional supplemental information. The Resource Guide will be distributed to members of your staff. In addition, the Department's ITS website serves as a helpful source of current/recently published information: www.its.dot.gov.

Interim Guidance

Consistent with the integration goals supported by the National ITS Architecture, as you begin the process of implementing the Interim Guidance, careful consideration of potential Y2K.

(Year 2000) computer problems should be a crucial part of your efforts. As you know, intelligent, integrated transportation systems, like most computer-based systems, are susceptible to Y2K computer problems. Additional information on Y2K issues specific to ITS can be found at the following website: www.fhwa.dot.gov/y2k.

Implementation of the Interim Guidance is an important step toward regional ITS integration. Your comments and experiences in applying the Interim Guidance will help to shape the final policy. Your efforts in support of implementing this Interim Guidance are appreciated.

I. Introduction

The Transportation Equity Act for the 21st Century (TEA-21) contains a provision requiring Intelligent Transportation System (ITS) projects implemented with funds from the Highway Trust Fund (including the Mass Transit Account) to conform to the national architecture [National ITS Architecture], applicable or provisional standards, and protocols. This document provides Interim Guidance for meeting this section of the law (Section 5206(e)-Conformity with National Architecture). Included with the Interim Guidance is a recommended approach to assist in meeting the legislative intent.

II. Background and Goals

Section 5206 of the legislation aims to accelerate the integrated deployment of ITS in metropolitan and rural areas and in commercial vehicle operations through the use of the National ITS Architecture or locally developed regional architectures. The legislation also aims to facilitate interoperability through the use of standards and protocols. The National ITS Architecture is a tool to help agencies identify and plan for the many functions and information sharing opportunities which may be desired.

The greatest benefit from ITS accrues when ITS projects are planned and designed within a broad regional context that supports the operation and management of the transportation system. Additionally, the development and use of a regional ITS architecture to guide the integration of ITS projects and programs and enable information sharing among stakeholders within an area is good, sound practice. Due to the variety of ITS services and stakeholders, a "region" can be defined as metropolitan, statewide, multi-state, and, for some applications, national.

Implementation of this legislative provision will foster sound ITS systems planning and design practices to achieve the following goals:

- involve and unite a wide range of stakeholders in planning for ITS
- support flexibility in tailoring ITS deployment and operations to local requirements
- achieve integration of ITS systems and components
- enable information sharing among stakeholders
- facilitate future ITS expansion in a cost-effective way
- provide for future interoperability of key ITS services at a national level.

The achievement of these goals will ultimately be manifested in five ways:

1. The consideration of transportation system operations and management will be integrated into the transportation planning process and reflected in regional transportation goals and objectives.
2. ITS strategies that effectively address regional goals and objectives will be considered and prioritized within regional planning efforts to promote efficient system management and operation. The development of a regional ITS architecture will complement this framework.
3. ITS projects will provide for all applicable information sharing opportunities.
4. ITS projects will use open standards and protocols in support of interoperability.
5. The National ITS Architecture will be used as a tool in regional architecture development and project design, as appropriate.

III. Applicability and Exceptions

The processes and practices being promoted in this document are sound practices for any project; however, listed below are the factors that affect whether or not this Interim Guidance applies:

Type of Project

For the purposes of the Interim Guidance, projects are classified into four categories:

- (1) projects without ITS,
- (2) ITS projects that affect regional integration,
- (3) ITS/Commercial Vehicle Operations (CVO) projects, and
- (4) other ITS projects

Categories (2), (3), and (4) are all considered to be ITS projects. ITS projects include both stand-alone ITS projects and projects that contain ITS elements. (See Appendix A for definitions). The Interim Guidance applies to all ITS projects, with particular attention to those ITS projects that affect regional integration. In the case of category (3), ITS/CVO projects, the Interim Guidance references other procedures that have been developed to support Commercial Vehicle Information Systems and Networks (CVISN) deployment. The Interim Guidance does not apply to category (1), projects without ITS.

Funding Source

All ITS projects receiving funding in whole or in part from the Highway Trust Fund are subject to the Interim Guidance.

Stage of Development

As of the date of issuance of the Interim Guidance, all ITS projects that are under construction or projects for which final design is complete are exempt from this Interim Guidance.

Legislative Exceptions

TEA-21 allows the Secretary to authorize exceptions to the conformity requirement for projects designed to achieve specific research objectives [as defined in Section 5206 (e) (2) (A)] and for projects to upgrade or expand an ITS in existence as of the date TEA-21 was enacted. Only those projects meeting three specific criteria are eligible for exception as an upgrade or expansion.

These criteria [as defined in Section 5206 (e) (2) (B)] are that the project:

- (i) (would) not adversely affect the goals or purposes of this subtitle [The ITS Act of 1998];
- (ii) is carried out before the end of the useful life of such system; and
- (iii) is cost-effective as compared to alternatives that would meet the conformity requirement.

TEA-21 also includes a general exception on funds used for the operation or maintenance of an ITS in existence on the date TEA-21 was enacted. A copy of the TEA-21 ITS Act goals, purposes, and exception language is provided in Appendix C.

Meeting the intent of the TEA-21 conformity language (and this Interim Guidance) does not in any way require replacements or retrofitting of existing systems. Logically planned enhancements take existing (or legacy) systems into account. Because one of the purposes of the ITS Act is to improve regional cooperation and operations planning, ITS projects that affect regional integration would generally not satisfy exception criteria (i) above. If an exception is granted, documentation of the determination and rationale should be kept in the project files.

IV. Interim Guidance

For the period of this Interim Guidance, to ensure conformity with the National ITS Architecture and applicable standards, the following applies:

A. ITS Projects

1. Recipients of funds from the Highway Trust Fund for ITS projects that affect regional integration shall evaluate those projects for institutional and technical integration with transportation systems and services within the region, and consistency with the applicable regional ITS architecture or the National ITS Architecture. Based upon this evaluation of

the project(s), Highway Trust Fund recipients shall take the appropriate actions to ensure that development of the project(s): (a) engages a wide range of stakeholders, (b) enables the appropriate electronic information sharing between shareholders, (c) facilitates future ITS expansion, and (d) considers the use of applicable ITS standards.

2. Recipients of funds from the Highway Trust Fund for ITS/CVO projects should follow the ITS/CVO Conformance Assurance Process Description to guide development of the project(s). These procedures are provided in the National ITS Architecture and Standards Resource Guide. Projects having a CVO technology component, but not meeting the definition of an ITS/CVO Project, should be treated as either ITS projects that affect regional integration or other ITS projects for the purposes of this Interim Guidance, and are subject to (IV.A.1) above or (IV.A.3) below.
3. Recipients of funds from the Highway Trust Fund for other ITS projects (not deemed to affect regional integration and not defined as ITS/CVO projects) should consider the same evaluation and actions described in (IV.A.1) above.

B. ITS Considerations in Transportation Planning

Statewide and metropolitan planning activities should include consideration of the efficient management and operation of the transportation system. This should include the regional implementation and integration of ITS services and development of a regional ITS architecture(s), as appropriate. Regional consideration of ITS should address (a) the integration of ITS systems and components, (b) inclusion of a wide range of stakeholders, (c) flexibility in tailoring ITS deployment and operations to local needs, (d) electronic information sharing between stakeholders, and (e) future ITS expansion.

The Interim Guidance is anticipated to be in effect for approximately one year. The Interim Guidance is the first step in a phased approach for implementing the TEA-21 conformity provision. The final implementing policy may contain additional requirements.

V. Recommended Approach

An approach for meeting the Interim Guidance (given in section IV) is suggested below.

A. Immediate Actions

1. Agencies should cooperatively work with FHWA Division (Federal Aid and Office of Motor Carriers) and/or FTA Region staff and other local agencies, including the applicable Metropolitan Planning Organization (MPO) or planning agency, to categorize projects receiving funding through the Highway Trust Fund into four categories: (1) projects without ITS, (2) ITS projects that affect regional integration, (3) ITS/CVO projects, and (4) other ITS projects. These categories will help to determine the projects for which the Interim Guidance applies. As a minimum, this action applies to all projects included in transportation plans, Statewide Transportation Improvement Programs (STIPs), Transportation Improvement Programs (TIPs), Commercial Vehicle Safety Plans (CVSPs), projects in design, and other projects that are under consideration. If an overall categorization is not carried out, then determination should be made on a case by case basis by recipient agencies and federal field staff.
2. In consultation with FHWA Division and/or FTA Region field staff and the applicable MPO or planning agency, agencies should determine if a regional ITS architecture exists within which individual ITS projects and programs should fit (at a metropolitan, statewide, corridor, or multi-state level). The regional ITS architecture should be defined at the subsystem and information (architecture) flow level, showing the type of information exchanges planned between specific agencies.

B. ITS Projects

The suggested approach for meeting the Interim Guidance on ITS Projects is provided below for the different categories of ITS projects. It is suggested that these steps be accomplished early in the planning and/or design process, as there will be greater ease in making modifications in the scoping and early design stages.

For ITS Projects that Affect Regional Integration and Other ITS Projects :

The suggested approach provided below (or an alternative approach that meets the intent of the Interim Guidance) should be applied to ITS projects that affect regional integration. The same approach is also recommended for other ITS projects, to a degree that is appropriate to the local situation, integration needs, and the type of project being implemented. The approach is tailored to accommodate areas both with and without a regional ITS architecture.

- 1A. For areas with a regional ITS architecture:

Scope the project to be consistent with the regional ITS architecture. If the project is under design, determine if that project fits within (is addressed by) the regional ITS architecture. If the project does not fit within the regional ITS architecture, consider whether the regional ITS architecture needs revision or whether the project scope/design needs modification.
- 1B. For areas without a regional ITS architecture:

Determine the applicable portions of the National ITS Architecture within which the project generally fits. As closely as possible, define the project using the subsystems and information (architecture) flows from the National ITS Architecture.
2. Early in project design (and periodically throughout the design process), the following considerations should be addressed:
 - a. Include all relevant agencies/stakeholders (including agencies responsible for transportation operations and appropriate planning agencies) in the project design process and ensure their continuing participation.
 - b. Ensure that all applicable subsystems and information (architecture) flows from the regional ITS architecture [or from the National ITS Architecture, for areas without a regional ITS architecture] have been considered in the project design. If not, consider modifications. It may be helpful to include, in the design documentation, listings or illustrations of the subsystems and information flows that are being provided by the project, and any relevant supporting discussion that indicates why information flows suggested by the regional ITS architecture [or from step 1B, for areas without a regional ITS architecture] may not have been included.
 - c. Consider incorporating additional information flows, as appropriate to the situation, in anticipation of future needs.
 - d. Ensure that relevant technology and operating agreements are reached between the affected parties.
 - e. Ensure that future expansion and information sharing opportunities are kept open through the project design strategy.
3. Identify any applicable standards and protocols that are appropriate for the project. Consider incorporating them into the project design and specifications. Wherever feasible, open systems should be considered in lieu of systems with proprietary

interfaces. It may be helpful to clearly identify, in the design documentation and specifications, the standards which are being used in the project.

Even if a regional ITS architecture exists, the National ITS Architecture can be used as a valuable resource for many of the above steps (e.g., for consideration of additional information flows, item 2c).

For ITS/CVO Projects:

1. Review the ITS/CVO Architecture Utilization Policy and, at a minimum, the following two related documents: the ITS/CVO Conformance Assurance Process Description and the Interoperability Testing Strategy. All three documents are included in the National ITS Architecture and Standards Resource Guide.
2. Follow the recommendations in the ITS/CVO Conformance Assurance Process Description:
 - a. Assess commitment to the architecture and operational concepts,
 - b. Assess project and work plans, reviews, and top-level design,
 - c. Assess detailed design, and
 - d. Assess implemented systems through interoperability testing.

The Conformance Assurance Process Description defines evaluation criteria for ITS/CVO architectural conformity, and establishes a mechanism for fostering conformance in a deployment or implementation. Each ITS/CVO project should have a plan which includes an incremental checkpoint system for assessing architecture conformance. At each checkpoint, documents should be reviewed against architecture criteria and issues and potential interoperability problems identified. If problems are discovered, remedial actions should be developed and implemented to resolve the problems. Progress toward resolution should be tracked, and action assignments/resolutions should be documented to serve as a monitoring and lessons learned tool for future CVO deployments.

3. Use the standards recommended for ITS/CVO to facilitate interoperability.

C. ITS Considerations in Transportation Planning

The activities within the suggested approach given below are intended to encourage sound consideration of the operations and management of the transportation system, including the development of a regional ITS architecture and related efforts to advance ITS in a region.

It should be noted that what constitutes a region is locally determined based on the needs for sharing information and coordinating operational strategies. For a metropolitan region, it is recommended that the size of a region not be smaller than a metropolitan planning area boundary. For ITS/CVO projects, it is recommended that the size of the region not be smaller than a state, with consideration for multi-state, national, and international applications. The size of the region should promote integration of transportation systems by fostering the exchange of information on operating conditions across a number of agencies and jurisdictions. Likewise, the determination of the leadership or "champion" role in carrying out these planning activities is a local decision.

Engage a broad range of stakeholders

An open and inclusive process for engaging a broad range of transportation stakeholders in developing ITS activities is key to achieving integration and information sharing. As appropriate, stakeholders should include but are not limited to the following: state transportation agencies, transit providers, metropolitan planning organizations, local (city/county) transportation agencies, police departments, fire departments, emergency medical services, toll authorities, traveler information providers, the media, telecommunications providers, other private transportation

providers, port authorities, airport authorities, commercial trucking associations, freight railroad associations, motor carrier regulatory or enforcement agencies, non-governmental organizations, and the general public.

Identify needs that can be addressed by ITS

The transportation problems and needs that can potentially be addressed through operations and management strategies should be identified. These needs should be developed in the context of the needs, goals, and objectives already developed as part of the applicable transportation planning process. Participants should discuss opportunities for using ITS applications as part of the overall mix of strategies to meet identified needs and goals.

Describe existing and planned ITS enhancements

A sound understanding of current and committed ITS projects, operational agreements, and information sharing arrangements is needed before future plans for ITS development are discussed. Participants should (1) identify existing ITS components and integration and (2) then develop a list of planned ITS enhancements that will address identified needs and improve the operations and management of the transportation system. The existing situation and planned ITS enhancements should be described in terms of the physical system description and the extent of information sharing. Metropolitan ITS and CVISN Deployment Tracking Surveys and indicators provide a useful starting point and approach for describing existing and planned ITS enhancements.

Define a regional ITS architecture

Given the existing and planned ITS enhancements, identified needs, and using the National ITS architecture as a tool, a regional ITS architecture can be developed to serve as a high-level template for ITS project development and design. The regional ITS architecture should include subsystems and information flows relevant to the area. The regional ITS architecture should be periodically revisited and updated to reflect ongoing discussions and improvements. An existing regional ITS architecture should be assessed to ensure that it provides an appropriate level of detail.

Define operating requirements

Implementation of the planned ITS enhancements and information sharing arrangements requires further definition of the operational agreements between the various agencies and jurisdictions. An operating concept should be established that identifies the general roles and responsibilities of the stakeholders in the development and day-to-day operation of the system. This includes establishing requirements or agreements on information sharing and traffic device control responsibilities and authority (e.g., deciding if back-up control capability is desired given a loss of power or failure condition). These decisions will be factored into the regional ITS architecture and will also flow-down through ITS projects as they are phased in. Because many ITS services and strategies involve communication and coordination, this step should not be overlooked.

Coordinate with planned improvements

As agencies begin to determine ITS projects that can be implemented in the near to mid-term time frame, potential opportunities should be explored for leveraging activities with planned capital projects such as facility reconstruction, capacity expansion, or new bus purchases. These projects are likely already contained in Transportation Improvement Programs (TIPs), Statewide Transportation Improvement Programs (STIPs), Commercial Vehicle Safety Plans (CVSPs), applicable transportation plans, or specific agency plans. An example of this coordination would be adding the ITS communications and surveillance infrastructure (or other components) at the same time as a reconstruction project, resulting in overall cost savings and minimized traffic disruption compared to adding the ITS infrastructure after the reconstruction project was completed.

Develop phasing schedule

The phasing of ITS projects and strategies into the regional transportation system and planning process will need to be considered. Phasing considerations include anticipated time frame for implementation, geographic context (both within and between jurisdictions), functional capabilities, and funding considerations. Geographic considerations involve decisions such as the initial and future system coverage area, which jurisdictions in the region will be upgraded first, which transit agencies in the region will participate in the electronic fare media project, etc. Functional considerations include deciding which basic functions of a system should be implemented first and which should be deferred. The phasing considerations and decisions made in the initial stages may be conceptual, with flexibility for changes and further definition during future project development and design.

Develop regional technology agreements

As potential ITS actions are advanced, it may become necessary for stakeholders to reach agreement on some technologies, standards, or deployment choices that have regional significance. This particularly applies to the near-term projects that have been identified. For example, regional choices on technologies or standards may be required for the telecommunications infrastructure, electronic toll tags, signal controllers and interfaces, electronic fare media, and specialized mobile radio systems. For ITS/CVO projects, public and private stakeholders need to reach agreement on hardware, software, operational, and programmatic requirements for interoperability to exist in multi-state and national systems. Standards should be identified to foster interoperability of systems and interchangeability of components. When identifying standards, agencies should consider the current status of ITS standards development activities and determine how and when these can best be incorporated into the designs of projects within the region.

Identify ITS projects for incorporation into transportation planning products

ITS projects utilizing funds from the Highway Trust Fund will be incorporated, as appropriate, into transportation planning and programming products (such as the transportation plan, the STIP, TIP, and the CVSP) and adopted by the metropolitan planning organization or other applicable planning agency. Ultimately, this can be best achieved when the consideration of ITS is consistent with the goals and objectives adopted by regional transportation planning bodies and carried out in the context of the transportation planning process.

VI. Appendices

A. Definitions

For the purpose of explaining terms used in this Interim Guidance, the following definitions are provided:

Intelligent Transportation Systems (ITS) - As defined in TEA-21, the term "intelligent transportation system" means electronics, communications, or information processing used singly or in combination to improve the efficiency or safety of a surface transportation system.

ITS Project - Any project that (in whole or in part) involves the application of ITS.

ITS Project that Affects Regional Integration - An ITS project that can serve as a catalyst in achieving regional ITS integration. Generally, those ITS projects with the potential to support electronic data sharing between transportation stakeholders, projects with substantial software design, projects involving major upgrades of central transportation management functions, and

projects involving significant communications would be considered ITS projects that affect regional integration.

ITS/CVO Projects - A subset of ITS projects which: (1) complete any component/service incorporated in the Commercial Vehicle Information Systems and Networks (CVISN) Level 1 deployment, and/or (2) install the International Border Clearance Safety System (IBCSS).

Other ITS Projects - The remaining ITS projects that are not characterized as affecting regional integration or being an ITS/CVO project, as explained above.

CVISN - Commercial Vehicle Information Systems and Networks. A concept that includes the information systems and communications networks that support Commercial Vehicle Operations (CVO). CVISN includes information systems owned and operated by governments, carriers, and other stakeholders.

CVISN Architecture - The ITS/CVO information systems and networks portion of the National ITS Architecture. The CVISN Architecture documentation begins with the National ITS Architecture and adds more detail in some areas (e.g., the operational scenarios and Electronic Data Interchange (EDI) message requirements) to facilitate further development. Documentation is available on the World Wide Web at <http://jhuapl.edu/program/transport/trans.htm> or contact the FHWA ITS/CVO Division Office at phone: 202-366-0950, fax: 202-366-7908.

CVISN Level 1 Deployment - The development and implementation of basic ITS/CVO information system elements in three capability areas (safety information exchange, credentials administration, and electronic screening) in conformance with the CVISN Architecture and Standards.

International Border Clearance Safety System (IBCSS) - An information system to identify impending border movements, access relevant safety and credentials information, and conduct clearance assessments on motor carriers, commercial motor vehicles, and drivers. The IBCSS is a portion of the International Border Clearance System, which provide the communications path between the commercial motor vehicle (CMV) and the border crossing in support of all border stakeholders, and an electronic border clearance assessment process for motor carriers, commercial motor vehicles, and drivers at North American land borders.

National ITS Architecture (also "national architecture") - As defined in TEA-21, the National ITS Architecture is the common framework for ITS interoperability that defines

- (A) the functions associated with intelligent transportation system user services;
- (B) the physical entities or subsystems within which the functions reside;
- (C) the data interfaces and information flows between physical subsystems; and
- (D) the communications requirements associated with the information flows.

Documentation is available from the U.S. DOT on the World Wide Web at <http://www.its.dot.gov> or <http://www.odetics.com/itsarch/> or contact the ITS Joint Program Office at phone: 202-366-9536, fax: 202-366-3302. As of September 20, 1998, Version 2.0 is the official version of the National ITS Architecture.

Regional ITS Architecture - A regional framework for ITS project development and design, which could be specified at a metropolitan, statewide, multi-state, or interurban corridor level. A regional ITS architecture is tailored to address specific local needs and, for the purposes of this Interim Guidance, includes the subsystems, agencies, and information flows relevant to the area. The National ITS Architecture may serve as a tool in the development of a regional ITS architecture.

ITS User Service - A categorization of ITS that represents what the system will do from the perspective of the user. User services formed the basis for the National ITS Architecture

development. As of July 1998, the National ITS Architecture consists of 30 user services. Additional user services are planned for incorporation during the next year or two.

Standard - As defined in TEA-21, the term "standard" means a document that is published by an accredited Standards Development Organization, and

(A) contains technical specifications or other precise criteria for intelligent transportation systems that are to be used consistently as rules, guidelines, or definitions of characteristics so as to ensure that materials, products, processes, and services are fit for their purposes; and
(B) may support the national architecture and promote

(i) the widespread use and adoption of intelligent transportation system technology as a component of the surface transportation systems of the United States; and
(ii) interoperability among intelligent transportation system technologies implemented throughout the States.

Provisional Standard - As defined in TEA-21, Section 5206 (c), a provisional standard is a standard that the Secretary may establish if the Secretary finds that the development or balloting of an ITS standard jeopardizes the timely achievement of the objectives identified in Section 5206 (a), after consultation with affected parties, and using, to the extent practicable, the work product of appropriate standards development organizations.

Subsystem - A physical entity within the National ITS Architecture or a regional ITS architecture within which the ITS functions reside. Subsystems are typically associated with one or more transportation agencies or stakeholders. Examples of subsystems from the National ITS Architecture include traffic management, transit management, fleet and freight management, toll administration, emergency management, information service provider, roadway, remote traveler support, and vehicle.

Information (Architecture) Flow - A representation of data that originates at one subsystem (or external system) and ends at another within the National ITS Architecture or a regional ITS architecture, depicting the information exchanges planned between specific agencies. The National ITS Architecture documentation refers to these information flows as physical architecture flows.

B. Questions and Answers

Applicability and Scope

1. **Q:** Which federally funded projects does this Interim Guidance apply to?

A: Any ITS project receiving whole or partial funding from the Highway Trust Fund (including the Mass Transit Account) is subject to this Interim Guidance. The Highway Trust Fund includes a broad range of transportation projects and programs, including Federal Aid Highway Programs, Federal Transit Administration programs, and safety programs. Examples of subject programs include (but are not limited to):

- National Highway System Program
- Congestion Mitigation and Air Quality Improvement Program
- Surface Transportation Program
- Urbanized and Non-Urbanized Areas Formula Grants Programs
- Transit Capital Investment Grants and Loans (Section 5309 funding)
- Motor Carrier Safety Assistance Program Grants
- Demonstration projects identified in TEA-21 (including High Priority Projects, and other earmarks under the ITS subtitle)

- Federal Lands Highways Program
- Interstate Maintenance Program
- Highway Bridge Program
- Job Access and Reverse Commute Program
- Rural Transportation Accessibility Programs
- Elderly and Persons with Disabilities Program
- Federal Aid Highway Safety Programs

2. **Q:** Are any ITS projects excepted from the conformity requirement?

A: Yes. Section 5206(e) of TEA-21 excepts the following projects:

1. Authorized projects designed to achieve specific research objectives outlined in the National ITS Program Plan or the Surface Transportation Research and Development Strategic Plan;
2. The upgrade or expansion of an existing ITS, if the expansion won't adversely affect the goals of conformity, is carried out before the end of the system's useful life, and is cost-effective as compared to alternatives that would be consistent; and
3. Projects to operate or maintain an existing ITS.

In addition, the Interim Guidance excepts projects already in construction and those that have completed the design phase. Note, however, that ITS projects that affect regional integration likely will not be excepted by Number 2 above, because to do so would adversely affect the goals of conformity.

3. **Q:** Does the Interim Guidance apply to ITS projects that do not receive funding from the Highway Trust Fund?

A: No. The Interim Guidance only applies to ITS projects that receive whole or partial funding from the Highway Trust Fund. However, the Interim Guidance and recommended approach to ITS projects and planning are considered sound practices for regional integration of ITS. Therefore, it is recommended that ITS projects not funded by the Highway Trust Fund also adhere to the Interim Guidance. Examples of projects which would not need to follow the Interim Guidance include projects funded entirely by state or local transportation agencies; projects funded by police, fire, or emergency medical services; and projects which are privately funded.

4. **Q:** Does the Interim Guidance apply to demonstration projects and other earmarks?

A: The Interim Guidance applies to all ITS projects with funding from the Highway Trust Fund, including demonstration projects (also referred to as "High Priority Projects"). The Interim Guidance also applies to CVO projects as indicated in the ITS/CVO Architecture Conformance Assurance Process. In addition, for ITS projects funded under section 5001(a) of TEA-21, refer to the Guidance for Congressionally-Designated ITS Projects (commonly referred to as "earmarked projects").

5. **Q:** How does the Interim Guidance differ from the Guidance for Congressionally-Designated ITS Projects?

A: The applicability differs in that Interim Guidance applies to all ITS projects funded in part or in whole by the Highway Trust Fund, whereas the guidance for congressionally-designated ITS projects (often known as "earmark" projects) applies only to projects being funded with ITS program category funds found under Section 5001(a) of TEA-21. The principles and intent of the Interim Guidance and the ITS earmark guidance are the same. However, since congressionally-designated projects are intended to serve as examples for meeting the conformity requirement, the ITS earmark guidance has slightly more detailed and specific documentation requirements. As an example, for one category of earmarked projects (regional deployments), states are being asked to commit to the development of a regional ITS architecture (and other regional ITS systems planning activities) as part of the partnership

agreement. In addition, under the ITS earmark guidance, project designs must include specific documentation of architecture conformity, which will be reviewed by FHWA Division and/or FTA Region offices, as appropriate. This is in contrast to the Interim Guidance, which does not require specific documentation, but encourages agencies to incorporate conformity documentation into normal project and planning documentation.

6. **Q:** Which transit projects does the Interim Guidance apply to?

A: Any ITS project receiving whole or partial funding from the Highway Trust Fund, including the Mass Transit Account, is subject to the Interim Guidance. This is true for both transit and highway projects.

7. **Q:** Does the Interim Guidance apply to ITS applications that are part of a larger construction project?

A: Yes. The Interim Guidance applies to all ITS projects that receive Highway Trust Funds, even when the ITS application is part of a larger project. However, having an ITS component in a larger project does not subject the non-ITS portions of your project to the Interim Guidance; but, you can consider the Interim Guidance as a framework to look for sensible ways to enhance connectivity in your region. Looking at it another way, larger projects may provide an opportunity to include ITS elements that may not have originally been scoped, such as laying telecommunication cable during construction.

8. **Q:** Does the Interim Guidance apply to ITS projects outside metropolitan areas or in rural areas?

A: Yes, the Interim Guidance applies outside metropolitan areas and in rural areas. As stated in the Interim Guidance, ITS projects that affect regional integration must be assessed for integration opportunities. Furthermore, development of a statewide architecture which addresses rural and small urban ITS applications is encouraged. Regardless of whether your area is rural or metropolitan, the National ITS Architecture can be useful in the development of the regional architecture.

9. **Q:** The National ITS Architecture is quite extensive in scope and lays out a multitude of information sharing possibilities. Do I have to plan for all of these interfaces and information exchanges in order to meet the intent of the Interim Guidance?

A: No. It is unlikely that any one region would implement everything envisioned by the National ITS Architecture. Planning and project development should continue to focus on meeting local and/or regional needs. Some of the functionality and information exchanges in the National ITS Architecture will not apply to your situation (e.g., your region might not have any toll roads and thus the Toll Administration and Toll Collection Subsystems of the National ITS Architecture would not apply). Using the National ITS Architecture may help you identify opportunities you might not have otherwise considered in developing your regional ITS architecture and ITS projects. In all circumstances, however, the regional ITS architecture and individual ITS projects should be tailored to local needs and problems.

10. **Q:** Will National ITS Architecture conformity dictate the characteristics of the design of my ITS system?

A: No. The National ITS Architecture and ITS standards do not specify design; rather, they focus on ensuring interface compatibility and structured information exchange. The National ITS Architecture supports a variety of detailed designs and is flexible enough to support both distributed and centralized systems. The National ITS Architecture does not make technology decisions for you. For example, collection of traffic data can be performed with a variety of technologies, including loop detectors, video imaging, and vehicle probes. Nor are you required to implement interfaces identified in the National ITS Architecture. The Interim Guidance on National ITS Architecture conformity does, however, imply that information sharing opportunities between transportation stakeholders are explored to the extent possible and appropriate for your area.

11. **Q:** Does conformity with the National ITS Architecture ensure interoperability?

A: No. The vision of ITS integration is a seamless, interoperable transportation network. Because the National ITS Architecture does not specify the interfaces or the technologies to be used in transportation systems and services, conformity does not ensure interoperability. Only through interjurisdictional agreements and cooperation can interoperability be assured. The National ITS Architecture does provide a framework for determining the needs or desirability of interoperability, and for making the institutional and technological decisions that are the foundation of an interoperable network. Interoperability is furthered through the adoption and widespread use of ITS standards.

12. **Q:** Will U.S. DOT require interoperability?

A: Where federal funding supports technologies and interfaces considered critical for national interoperability, U.S. DOT expects to require interoperability, but only after the standards have matured to ensure their operational capability. As called for in TEA-21, U.S. DOT is currently developing a list of critical standards appropriate for ensuring interoperability.

13. **Q:** What is the distinction between the use of the terms "conformity" and "consistency?"

A: The TEA-21 language (Section 5206[e]) addressed by the Interim Guidance calls for ";conformity"; with the National ITS Architecture and Standards. U.S. DOT's incremental, phased approach to implementing this provision is better reflected by the use of the term "consistency" with the National ITS Architecture. For the purposes of the Interim Guidance, these terms are deemed synonymous.

ITS Projects

14. **Q:** What are some examples of "ITS projects that affect regional integration" as defined in this Interim Guidance?

A: Generally, ITS projects that affect regional integration are those that can serve as catalysts in achieving ITS integration for a region. Examples of ITS projects that affect regional integration include the construction or functional expansion of a transportation management center, installation or expansion of the functional capability of a communications system, and the purchase of an AVL-equipped bus fleet. Another example is a multi-agency project which aims to integrate transportation systems (e.g., freeway-arterial system integration, traffic-transit integration).

15. **Q:** What do I do for ITS projects that do not affect regional integration?

A: The Interim Guidance is designed to focus attention on ITS projects that do affect regional integration, but all ITS projects (receiving Highway Trust Funds) should consider the intent and approach in the Interim Guidance as a way to ensure conformity with the National ITS Architecture and permit cost-effective future expansion should the need arise. Examples of ITS projects that do not affect regional integration are the installation of an isolated traffic signal system in a small, rural town; or the purchase of a limited set of replacement buses.

16. **Q:** How does the Interim Guidance apply to projects in the final stage of design?

A: Adherence to the Interim Guidance is not required for projects in the final stage of design as of the date of Interim Guidance issuance. However, it is good practice to review projects for anything that can be done at a reasonable cost to facilitate future integration. Projects in the final stage of design are not specifically excepted by the legislation, so the project's lead agency should work with the FHWA Division or FTA Region office to determine the appropriate course of action. Projects for which design has been completed or that are in construction as of the date this Guidance is issued do not need to revisit the design stage.

17. **Q:** How will existing (legacy) equipment with proprietary interfaces be addressed?

A: The Interim Guidance does not require replacement of legacy systems or equipment having proprietary interfaces. Rather, it is recommended that you plan with existing systems in mind and encourage future investments that would facilitate electronic data-sharing and the use of open interfaces, while minimizing the use of proprietary interfaces. Existing systems such as traffic signals, overhead messages, computer-aided dispatch for ambulances, or automatic vehicle location for buses are an important consideration in developing an ITS project and your regional ITS architecture. As new features and system upgrades are planned, the new designs should provide for open, non-proprietary interfaces identified in the National ITS Architecture and approved ITS standards as appropriate for your area and consistent with your regional ITS architecture.

ITS Considerations within Transportation Planning

18. **Q:** Are ITS projects excepted from the metropolitan or statewide planning processes?

A: No. ITS projects should be developed using the same planning processes as other transportation projects, in accordance with metropolitan and statewide planning procedures specified in TEA-21 (sections 1203, 1204, 3004, and 3005). In addition, ITS may be considered as one strategy for addressing the new systems management and operation planning factor requirement in TEA-21.

19. **Q:** What are the benefits of integrating ITS into the planning process?

A: Statewide and metropolitan planning activities should consider a broad range of actions and investments aimed at improving the management and operation of the transportation system. ITS is a powerful tool for meeting the system operation and management needs of a region. Like any tool, it is most effective when it has broad support and is applied in the proper circumstances. Regional efforts aimed at identifying appropriate ITS strategies and investments should be advanced in the context of the goals and objectives adopted by the planning process. This will ensure that specific ITS deployment options will address regional transportation goals and objectives in the most effective possible manner. In addition, there is considerable overlap between the planning process and ITS systems planning. The integration of ITS and planning will ensure that these processes are carried out together in a consistent and efficient manner.

20. **Q:** Who should be the lead in developing a regional ITS architecture?

A: Identifying a lead agency is a local decision; development of a regional architecture can take place in whatever forum suits the area. You are encouraged to develop ITS activities within your existing planning processes. Making use of existing agency agreements and structures may help you to determine who should be involved and who may be best suited to take the lead role.

21. **Q:** Who should be involved as ITS is considered within the planning process?

A: The range of stakeholder involvement is most appropriately addressed at the local level. A fundamental goal is to involve and unite a wide range of stakeholders to ensure consideration of the broadest range of integration opportunities. It is expected that the number of stakeholders included in any area will grow over time as ITS is incorporated into the regional transportation planning process and the range of ITS activities expands. As a starting point, agencies or other groups within a region that are typically involved in transportation planning or ITS development should be involved. The National ITS Architecture may help you identify stakeholders that are not normally included in the transportation planning process but who may be important to ITS systems planning (e.g., private sector information service providers; police, fire, and other emergency services; and private sector transportation service providers).

22. **Q:** What if certain stakeholders do not want to participate?

A: The intent of gathering a broad range of stakeholders is to ensure that the consideration and development of potential ITS actions and investments stems from a collaborative, inclusive effort. Good faith efforts should be made to include all stakeholders. Notwithstanding this, the process should begin with those agencies/parties willing to participate.

23. **Q:** What is a "region" as it relates to the development of a regional ITS architecture?

A: What constitutes a region is a local determination that should be based on the needs for sharing information and coordinating operational strategies in order to address transportation problems. In this context, a region is not constrained by political boundaries, and could be specified at a metropolitan, statewide, multi-state, or inter-urban corridor level. For a metropolitan region, it is recommended that the size of a region not be smaller than a metropolitan planning area boundary. For ITS/CVO projects, it is recommended that the size of the region not be smaller than a state, with consideration for multi-state, national, and international applications. The size of the region should promote integration of transportation systems by fostering the exchange of information on operating conditions across a number of agencies and jurisdictions.

24. **Q:** What is the relationship between the nine core components of the metropolitan ITS infrastructure and the National ITS Architecture?

A: The nine core components of the metropolitan ITS infrastructure (Freeway Management, Incident Management, Traffic Signal Control, Electronic Toll Collection, Transit Management, Electronic Fare Payment, Highway Rail Intersections, Emergency Management, and Regional Multimodal Traveler Information) represent an initial way of thinking about the potential types of ITS technologies that could be usefully linked in a metropolitan region. The National ITS Architecture provides the framework necessary for more detailed planning about how to structure the communications and information flows between and among the different subsystems that characterize a fully integrated regional ITS system.

25. **Q:** How does the Interim Guidance relate to the deployment and integration tracking of CVISN and metropolitan ITS infrastructure that have been ongoing in recent months in some regions?

A: The definitions of metropolitan ITS infrastructure and the framework used in the deployment tracking questionnaire provide excellent starting points for developing and collecting the information necessary for beginning work on a regional ITS architecture in your area. If a deployment tracking survey has already been filled out, it should be very helpful in documenting the existing level of ITS deployment (including information sharing arrangements), which is fundamental to future planning efforts. Further explanation of the metropolitan and CVISN deployment tracking is included in the Resource Guide.

26. **Q:** Can a regional ITS architecture, developed from an Early Deployment Plan, be used to demonstrate conformity with the National ITS Architecture?

A: Architectures developed under previous early deployment efforts may be considered for potential applicability to the Interim Guidance. Some early deployment studies that do not include architectures, or were not inclusive of a wide range of stakeholders, do not meet the intent and approach of the Interim Guidance. In such cases, additional steps may be necessary, such as identifying/determining information flows between regional architecture subsystems. Conversely, Early Deployment Plans that engaged a broad range of stakeholders and included a regional ITS architecture would likely meet the intent of the Interim Guidance.

Federal Role

27. **Q:** What is the federal oversight role, specific to integrating ITS into the planning process?

A: The Interim Guidance does not change federal oversight of the transportation planning process. Within existing federal oversight roles and activities, FHWA and FTA staff are encouraged to explore opportunities with their constituents for integrating ITS into the transportation planning process. Such opportunities may become obvious during the development of plan updates to Unified Planning Work Programs, the STIP or TIP, or triennial certifications. These reviews should also consider whether a regional ITS architecture exists, defined at the subsystem and information (architecture) flow level. For commercial vehicle operations, ITS opportunities should be considered during updates of the Commercial Vehicle Safety Plan.

28. **Q:** How will the Interim Guidance affect the STIP/TIP development cycle?

A: The Interim Guidance is not intended to delay the development cycle (preparation, review, or approval) of a STIP or TIP. However, applying the Interim Guidance to the transportation planning process at the earliest practical convenience will aid in identifying and capitalizing on potential cost-saving and system-enhancing opportunities.

29. **Q:** What constitutes the federal oversight role at the project stage?

A: The Interim Guidance does not change the federal oversight role at the project stage. For those ITS projects with federal oversight, the appropriate federal office will ensure that the Interim Guidance is followed as part of the regular review process. For those projects with no federal oversight requirement, recipients are responsible for ensuring that the Interim Guidance is followed. Compliance with the Interim Guidance may be a discussion topic in process or triennial reviews.

30. **Q:** Are all ITS projects subject to federal oversight?

A: No. Refer to the appropriate oversight procedure for the project in question. If the state DOT is willing, it is suggested that FHWA and FTA be involved in all ITS projects on the National Highway System during the initial implementation period for the Interim Guidance.

31. **Q:** What kind of help and support can be expected from U.S. DOT?

A: Various support mechanisms are under way or being planned at the present time. A training course on the National ITS Architecture is available now with more offerings planned in the fall of 1998. Technical assistance documents on the use of the National ITS Architecture to facilitate project development and planning for specific application areas will be available shortly. Technical assistance is also available through the U.S. DOT peer-to-peer program. Checklists also will be made available to serve as helpful guidance and reminders. For more information, contact your local FHWA or FTA office, and visit the ITS website: www.its.dot.gov.

ITS Standards

32. **Q:** What is an ITS standard and which standards have been adopted?

A: Standards define how system components inter-connect and interact within an overall framework called an architecture. The National ITS Architecture identified the need for many ITS standards to support interface compatibility. U.S. DOT has yet to adopt ITS standards, and anticipates proceeding cautiously in order to allow emerging standards to reach a point of acceptability by implementing agencies. Initial standards are just now beginning to be completed and approved by Standards Development Organizations. Once approved by the Standards Development Organizations, it will take some time for standards to be validated to the satisfaction of implementing agencies.

33. **Q:** Should an ITS standard be used if it has not yet been approved, or adopted by U.S. DOT?

A: If an agency deems that an ITS standard is not yet sufficiently mature for routine use, it should

deploy ITS mindful of the new standard and in anticipation of an eventual transition. Your design process may incorporate draft standards, but recognize that these may change before being finalized. Therefore, work with your vendors to be sure that they commit to bringing their products into compliance with the final standard when it is approved.

Documentation

34. **Q:** What documentation is required for implementation of the Interim Guidance?

A: No new documentation is required, but additional information within existing documentation needs to demonstrate that the intent of the Interim Guidance has been met.

C. Applicable Legislation

SECTION 5203. GOALS AND PURPOSES [of the Intelligent Transportation Systems Act of 1998].

(a) Goals.--The goals of the intelligent transportation system program include?

- (1) enhancement of surface transportation efficiency and facilitation of intermodalism and international trade to enable existing facilities to meet a significant portion of future transportation needs, including public access to employment, goods, and services, and to reduce regulatory, financial, and other transaction costs to public agencies and system users;
- (2) achievement of national transportation safety goals, including the enhancement of safe operation of motor vehicles and nonmotorized vehicles, with particular emphasis on decreasing the number and severity of collisions;
- (3) protection and enhancement of the natural environment and communities affected by surface transportation, with particular emphasis on assisting State and local governments to achieve national environmental goals;
- (4) accommodation of the needs of all users of surface transportation systems, including operators of commercial vehicles, passenger vehicles, and motorcycles, and including individuals with disabilities; and
- (5) improvement of the Nation's ability to respond to emergencies and natural disasters and enhancement of national defense mobility.

(b) Purposes.--The Secretary shall implement activities under the intelligent system transportation program to, at a minimum?

- (1) expedite, in both metropolitan and rural areas, deployment and integration of intelligent transportation systems for consumers of passenger and freight transportation;
- (2) ensure that Federal, State, and local transportation officials have adequate knowledge of intelligent transportation systems for full consideration in the transportation planning process;
- (3) improve regional cooperation and operations planning for effective intelligent transportation system deployment;
- (4) promote the innovative use of private resources;
- (5) develop a workforce capable of developing, operating, and maintaining intelligent transportation systems; and

(6) complete deployment of Commercial Vehicle Information Systems and Networks in a majority of States by September 30, 2003.

SECTION 5206. NATIONAL ARCHITECTURE AND STANDARDS.

(a) IN GENERAL-

(1) **DEVELOPMENT, IMPLEMENTATION, AND MAINTENANCE-** Consistent with section 12(d) of the National Technology Transfer and Advancement Act of 1995 (15 U.S.C. 272 note; 110 Stat. 783), the Secretary shall develop, implement, and maintain a national architecture and supporting standards and protocols to promote the widespread use and evaluation of intelligent transportation system technology as a component of the surface transportation systems of the United States.

(2) **INTEROPERABILITY AND EFFICIENCY-** To the maximum extent practicable, the national architecture shall promote interoperability among, and efficiency of, intelligent transportation system technologies implemented throughout the United States.

(3) **USE OF STANDARDS DEVELOPMENT ORGANIZATIONS-** In carrying out this section, the Secretary may use the services of such standards development organizations as the Secretary determines to be appropriate.

(b) **REPORT ON CRITICAL STANDARDS-** Not later than June 1, 1999, the Secretary shall submit a report to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure and the Committee on Science of the House of Representatives identifying which standards are critical to ensuring national interoperability or critical to the development of other standards and specifying the status of the development of each standard identified.

(c) PROVISIONAL STANDARDS-

(1) **IN GENERAL-** If the Secretary finds that the development or balloting of an intelligent transportation system standard jeopardizes the timely achievement of the objectives identified in subsection (a), the Secretary may establish a provisional standard after consultation with affected parties, and using, to the extent practicable, the work product of appropriate standards development organizations.

(2) **CRITICAL STANDARDS-** If a standard identified as critical in the report under subsection (b) is not adopted and published by the appropriate standards development organization by January 1, 2001, the Secretary shall establish a provisional standard after consultation with affected parties, and using, to the extent practicable, the work product of appropriate standards development organizations.

(3) **PERIOD OF EFFECTIVENESS-** A provisional standard established under paragraph (1) or (2) shall be published in the Federal Register and remain in effect until the appropriate standards development organization adopts and publishes a standard.

(d) WAIVER OF REQUIREMENT TO ESTABLISH PROVISIONAL STANDARD-

(1) **IN GENERAL-** The Secretary may waive the requirement under subsection (c)(2) to establish a provisional standard if the Secretary determines that additional time would be productive or that establishment of a provisional standard would be counterproductive to achieving the timely achievement of the objectives identified in subsection (a).

(2) **NOTICE-** The Secretary shall publish in the Federal Register a notice describing each standard

for which a waiver of the provisional standard requirement has been granted, the reasons for and effects of granting the waiver, and an estimate as to when the standard is expected to be adopted through a process consistent with section 12(d) of the National Technology Transfer and Advancement Act of 1995 (15 U.S.C. 272 note; 110 Stat. 783).

(3) **WITHDRAWAL OF WAIVER-** At any time the Secretary may withdraw a waiver granted under paragraph (1). Upon such withdrawal, the Secretary shall publish in the Federal Register a notice describing each standard for which a waiver has been withdrawn and the reasons for withdrawing the waiver.

(e) CONFORMITY WITH NATIONAL ARCHITECTURE-

(1) IN GENERAL- Except as provided in paragraphs (2) and (3), the Secretary shall ensure that intelligent transportation system projects carried out using funds made available from the Highway Trust Fund, including funds made available under this subtitle to deploy intelligent transportation system technologies, conform to the national architecture, applicable standards or provisional standards, and protocols developed under subsection (a).

(2) SECRETARY'S DISCRETION- The Secretary may authorize exceptions to paragraph (1) for--

(A) projects designed to achieve specific research objectives outlined in the National ITS Program Plan under section 5205 or the Surface Transportation Research and Development Strategic Plan developed under section 508 of title 23, United States Code; or

(B) the upgrade or expansion of an intelligent transportation system in existence on the date of enactment of this subtitle, if the Secretary determines that the upgrade or expansion-

(i) would not adversely affect the goals or purposes of this subtitle;

(ii) is carried out before the end of the useful life of such system; and

(iii) is cost-effective as compared to alternatives that would meet the conformity requirement of paragraph (1).

(3) EXCEPTIONS- Paragraph (1) shall not apply to funds used for operation or maintenance of an intelligent transportation system in existence on the date of enactment of this subtitle.

(f) SPECTRUM- The Federal Communications Commission shall consider, in consultation with the Secretary, spectrum needs for the operation of intelligent transportation systems, including spectrum for the dedicated short-range vehicle-to-wayside wireless standard. Not later than January 1, 2000, the Federal Communications Commission shall have completed a rulemaking considering the allocation of spectrum for intelligent transportation systems.