APPENDIX VI
INTELLIGENT TRANSPORTATION SYSTEMS

In 1991, Congress passed the Intermodal Surface Transportation Efficiency Act (ISTEA) which called for the creation of an economically efficient and environmentally sound transportation system that will move people and goods in an energy efficient manner and will provide the foundation for a competitive American transportation industry. The passing of ISTEA led to a focus on research and development of advanced technologies such as information processing, communications, control, and electronics to improve the transportation system. Passage of the Transportation Equity Act for the 21st Century (TEA-21) in 1998 provided further support of development of Intelligent Transportation Systems (ITS) strategies.

Transportation technology helps freight transport to become more productive and efficient. ITS integrate advanced computer information processing, communications, sensor, and electronics technologies and management strategies to increase the safety and efficiency of the surface transportation system. The essence of ITS involves system integration to yield greater productivity, connectivity, safety, and environmental compatibility[1].

NATIONAL ITS ARCHITECTURE

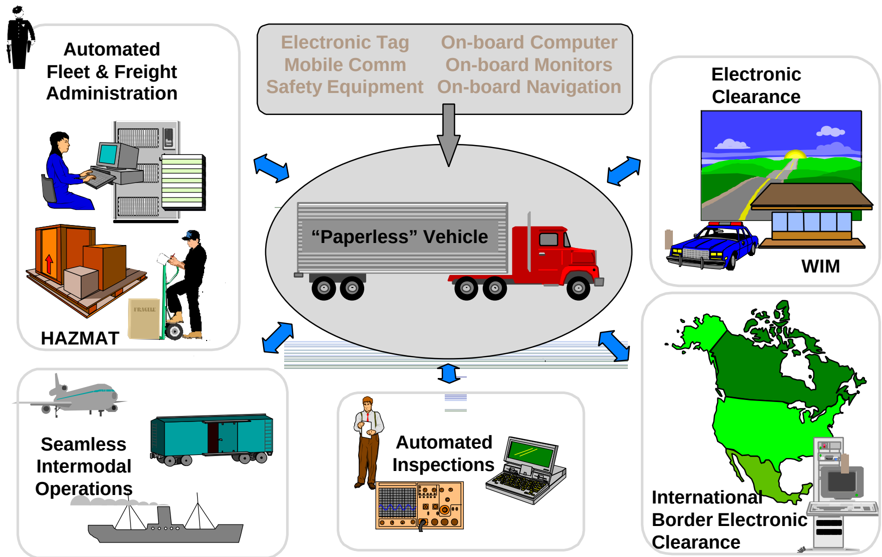
A large portion of current work occurring in the ITS field is with commercial vehicle operations (CVO). A Commercial Vehicle Information Systems and Networks (CVISN) is a collection of information systems and communications networks that provide support to CVO. The Federal Motor Carrier Safety Administration (FMCSA), formerly part of the Federal Highway Administration (FHWA), has developed a national ITS architecture intended to organize and manage ITS/CVO deployment and communicate the ITS/CVO program to all states deploying ITS/CVO strategies. Part of the architecture is development of an ITS/CVO Business Plan, which states in the LATTS Region, with the exception of three Alliance members, are in the process (or have completed the process) of developing. **Exhibit VI-1** shows the vision of safe and efficient commercial vehicle operations through ITS application.

ITS AND THE LATTS GOAL

The goals of ITS are to improve highway safety, simplify operations for all aspects of travel, and save time, money, and lives. These goals tie directly to the objectives for meeting the goal of the LATTS Region. ITS provide the means for increased efficiency, freight mobility, and an interconnected multimodal system while improving safety and environmental impacts.

[1] *Statewide Goods Movement Strategy*, State of California, August 1998.

Exhibit VI-1
CVISN VISION: SAFE AND EFFICIENT COMMERCIAL VEHICLE OPERATIONS



There are several opportunities for ITS applications in the LATTS Region. The following discussion details those ITS programs in terms of technical infrastructure and organization infrastructure. Given the large amount of commercial vehicle trade occurring at border crossings, the issue of ITS use at these locations has been emphasized in a separate discussion.

ITS technologies have been successfully implemented in many cases, and while cost/ benefit information is limited, it is generally accepted that ITS technologies can provide significant benefits at a relatively low cost, when implemented appropriately. Due to their role in managing congestion, ITS technologies have most often been applied in urban areas. Typical installations include driver information technologies, vehicle detector stations, closed circuit television, and traffic control technologies.

Large urban areas such as Los Angeles were on the forefront of many ITS applications, but ITS has since become the domain of many medium sized cities, as well. Generally speaking, ITS implementation is often a gradual process and because it must meet growing and changing travel demands, no city is likely to ever complete its ITS network. With that caveat, it is worth noting that many of the urban areas within the LATTS Region have implemented or are planning to implement ITS. Many of the plans are the result of Early Deployment Studies funded largely by the Federal Highway Administration. Typical ITS components utilized in and planned for the LATTS Region include freeway monitoring such as vehicle detectors and closed circuit television, and motorist information, such as changeable message signs and highway advisory radio.

ITS APPLICATION IN THE LATTS REGION

Analysis of the LATTS highway, rail, airport and port strategic systems found that the current network serving Latin American trade, as well as other traffic, is constrained. The highway network is constrained in urban areas, not primarily because of trade from Latin America, but because of all traffic traveling on the existing network, whether it be local commuter and commercial vehicle traffic, or through commuter and commercial vehicle traffic. Latin American trade comprises only a small portion of total traffic within urban areas. In order to improve efficiency of Latin American trade, improvements must be made for all traffic traveling on the highway network. Therefore, ITS applications discussed in this section may or may not tie directly to Latin American trade in terms of movement of goods. However, any improvement to traffic movement through the LATTS strategic system will inevitably result in improvement for Latin American trade.

ITS are also applied in rural areas. However, the existing LATTS Strategic System is not constrained in rural areas. With the exception of rural weigh-in-motion (WIM) station locations, ITS applications would not provide very large benefits in rural areas. The various ITS applications available are discussed in the Technical Infrastructure section of this Appendix.

The other key constraint in the LATTS Region where ITS are applicable is at gateways (airports, ports, international and state border crossings). The transfer of information is essential at these locations. ITS can improve the efficiency of information transfer so that delays in goods shipments are reduced. Issues associated with interoperability, or the transfer of information efficiently at gateways whether it be across international or state borders, is discussed in the Organizational Infrastructure section. As stated previously, improving operations at border crossings is so critical to the LATTS Region that border crossings are discussed in a separate section.

ITS TECHNICAL INFRASTRUCTURE

Exhibit VI-2 summarizes ITS technologies. The list represents a range of ITS applications, including proven technologies such as changeable message signs, as well as innovative technologies that are still in development, such as automated highway systems. Each technology is described in more detail in the following paragraphs[2].

[2] *Recommended Corridor Investment Strategies,* Task J Report, I-35 Trade Corridor Study, prepared by HNTB Corporation/Wilbur Smith Associates Team, July 12, 1999.

Exhibit VI-2
ITS TECHNOLOGIES

- Driver Information
- In-vehicle Route Guidance
- Vehicle Detector Stations
- Closed Circuit Television Monitoring
- Traffic Control Technologies
- Traveler Services Information Technologies
- Emergency Notification Technologies
- Electronic Payment Technologies and Services
- Weigh-In-Motion Scales
- Weather Monitoring Stations
- Automated Highway Systems
- Incident Management ("mayday" system)
- Pre-Trip Travel Information Technologies
- En-Route Transit Information
- Ride Matching and Reservations Technologies
- Public Transportation Management Technologies

Driver information technologies provide information about congestion and construction activities, as well as information about detours, weather, and hazardous roadway conditions. A wide variety of technologies may be used to communicate with the driver, including changeable message signs, highway advisory radio, commercial radio and television traffic reports, in-vehicle monitors, roadway hotlines, and Internet sites with roadway speed and congestion data. Driver information is valuable not only in urban areas where congestion reports are common, but also in rural areas where construction and weather information may be most critical, and in the outlying suburbs where information may allow corridor travelers to avoid congestion before entering the urban area.

In-vehicle route guidance technologies provide turn-by-turn directions that allow travelers to easily navigate in unfamiliar cities. Guidance technologies may be paired with traveler information technologies and with real-time congestion data for additional capabilities.

Vehicle detector stations, including induction loops, radar, transponder readers and other technologies, provide information to be used to monitor congestion and other roadway conditions. Detector stations are especially important on roadway segments that experience regular congestion, and at high volume interchanges and other critical junctions.

Closed circuit television (CCTV) monitoring provides visual verification of congestion detected through detector stations and other sources, as well as additional information that may be helpful to emergency response vehicles in the event of an accident.

Traffic control technologies include adaptive signal systems on arterials and at freeway interchanges and freeway ramp metering. These technologies may be used to assure minimal delay to corridor traffic.

Traveler services information technologies provide information regarding corridor services and facilities both en-route via an in-vehicle terminal or at highway rest stops and for pre-trip planning via the internet or via terminals at corridor hotels, motels and major activity centers.

Emergency notification technologies cover a range of possibilities, including roadside call boxes, a single cellular phone number to report emergencies, and "mayday" systems which allow automated collision notification. Emergency notification is of particular interest in rural areas. In urban areas, the prevalence of cellular phones has contributed to the timeliness and frequency, but not always the accuracy, of emergency notification for accidents and incidents.

Electronic payment technologies utilize electronic tags such as transponders to allow travelers to pay for transportation charges on a debit or credit basis. Ideally, the collection of all tolls and other transportation charges could be integrated to allow a single transponder and billing system to be used. Electronic payment technologies would also allow innovative operating strategies such as congestion pricing to be implemented with minimal delay to motorist.

Weigh-in-motion scales (WIMs) allow commercial vehicles to be weighed in mainline traffic. Vehicles equipped with transponders could be cleared through the fixed scale without leaving mainline traffic. A transponder reader at roadside picks up the vehicle's unique identity from its transponder, checks associated credentials and permit status, and electronically clears the vehicle for weigh station bypass. Only those vehicles with problems or without transponders would be directed off-road to the fixed scale for further inspection or static weighing. WIM scales are an example of an ITS application which is used effectively in rural areas.

Weather monitoring stations utilize roadway and mounted sensors to record and evaluate temperature, wind, pressure and other weather related data. A shared database would allow storms to be tracked and weather information and advisories to be shared.

Automated highway systems provide automated control of instrumented vehicles on instrumented highways, thus increasing safety and efficiency. While these benefits are appealing and such systems should be considered in the long term for the region, implementation is not likely in the near future due to technology limitations.

Incident management refers to the identification and response to freeway accidents and incidents. An incident management program may include an emergency number for reporting incidents, freeway service patrols, planned diversion routes and enhanced cooperation and coordination between neighboring jurisdictions and responding agencies. Although incident management does not require ITS technologies, detection and surveillance equipment may be used to increase the efficiency of incident management activities. The need for an incident management program is often identified during ITS planning activities, and many agencies are involved in both incident management and ITS programs.

Although not currently implemented widely, ITS technologies also have an important role in rural areas, most notably to contribute to driver safety and security. The LATTS highway system has a large rural component, for which a **“mayday” system** might beneficially be developed and implemented. Current technologies may favor a cellular or satellite based system. However, if fiber optics is widely implemented, then a fiber–based system may be more practical.

Also, a **comprehensive and coordinated weather monitoring system** should be considered for possible implementation. This system could utilize existing weather stations as well as new stations where needed, and could be coordinated throughout the region. This system would be used to warn motorists of dangerous weather in the Region, and could be coordinated with other driver and traveler information in the Region. Weather information is of interest throughout the Region, not only in the northern portion where winter storms are common, but also as far as south as Texas and Florida, where wind, fog, snow, and ice storms may have disastrous consequences due not only to their severity, but also to the fact that maintenance agencies may be ill equipped to deal with them.

Transit systems may also utilize ITS technologies to enhance service and efficiency. ITS may be used to enhance coordination with multiple transit providers in an area, as well as to provide information to travelers about transit options. Possible technologies include the following.

Pre-trip travel information technologies provide travelers with information about all available modes prior to departure. This information could be provided via the Internet, or at terminals or kiosks at hotels and major activity centers.

En-route transit information provides information to transit patrons during the trip, including real-time information for connecting transit services.

Electronic payment services, either debit or credit, allow transit patrons to travel without cash. Eventually, such services could be coordinated among multiple jurisdictions in the corridor.

Ride matching and reservations technologies include computers that utilize carpool and vanpool databases to allow commuters to share a ride. Algorithms reflect commuter preferences, such as smoking, as well as trip origin and destination. Recent programs have incorporated “instant” matches for the same day, utilizing pages, whereas more traditional programs intend to match commuters in a longer time frame, often mailing potential rideshare matches and letting the commuters contact one another by phone.

Public transportation management technologies automate the operations and management of transit systems. The most common application is an automatic vehicle location (AVL) system to track vehicles identifying schedule deviations and potential solutions. AVL systems, which may be satellite (global positioning system, GPS) or transponder based, also may provide audio or video monitoring, enhancing security on-board transit vehicles.

ITS ORGANIZATIONAL INFRASTRUCTURE

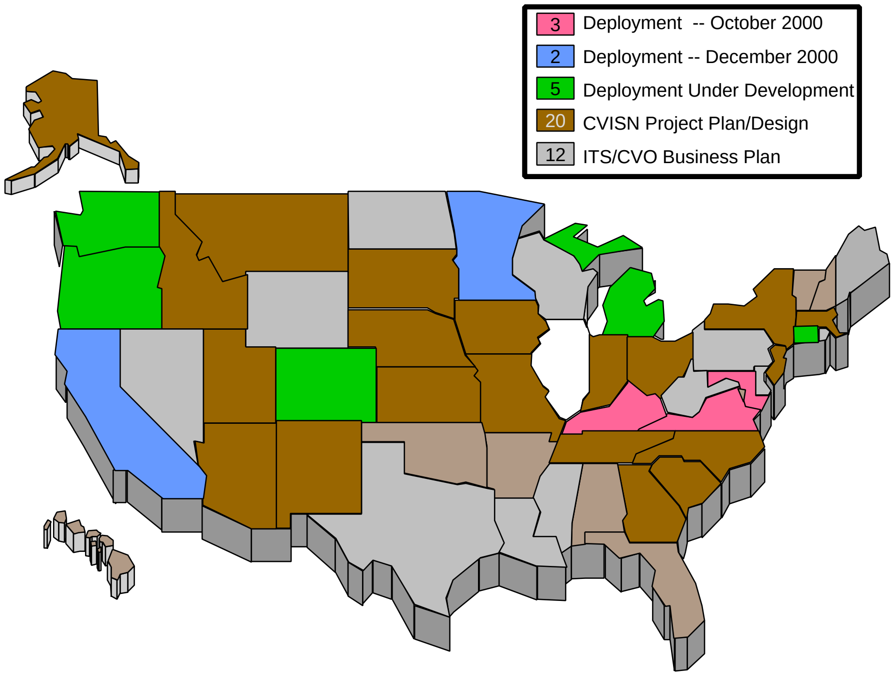
The numerous ITS technologies already in place and planned for implementation illustrate that ITS is likely to play an important role in the LATTS Region. It is recommended that in addition to state ITS initiatives, the cities along regional corridors work together to create a seamless network of ITS applications, to whatever extent is practicable. This does not require that all cities implement the same technologies, but does imply that cities strive for a compatible user interface for those technologies that they do implement. This would provide continuity for the user so that driver expectations regarding uniform technologies are met, as well as enhance the safety and utility of the system. This would apply to driver information technologies, traveler services information technologies, emergency notification technologies, and electronic payment technologies.

Several years ago, the FHWA initiated the Commercial Vehicle Information Systems and Networks (CVISN) prototype and model deployment. CVISN is focused on developing the technical infrastructure required to automate CVO credentialing, clearance and safety assurance functions. CVISN continues to develop organizational infrastructure, i.e., the standards, protocols and communications systems that will allow states and motor carriers to routinely exchange and access the information required to support electronic credentialing, clearance and safety assurance. CVISN is not a new database or system, but is rather a way for existing systems to exchange existing information electronically through the use of standards developed in CVISN and commercially available communications systems. CVISN also assists states in other regulatory or administrative functions required to execute the goals of CVISN. The central vision of CVISN is that by the year 2005, most CVO business and safety assurance transactions will be conducted electronically. State business plans help position each state to take advantage of and leverage the technologies being developed through the CVISN programs. The Business Plan provides the framework for the organizational and institutional infrastructure that is necessary to accommodate and implement the opportunities for technological change brought about by CVISN[3]. **Exhibit VI-3** shows the status of each state in the CVISN deployment program as of February, 2000.

States throughout the southeast have prepared CVO/ITS plans concurrently. Key steering committee members from each state met periodically during the planning process to exchange information and ideas. Regional coordination provides opportunities for individual states to integrate their own activities with those of other states and to leverage other state's investments in transportation corridors.

[3] *Louisiana CVO/ITS Business Plan,* prepared by the Louisiana CVO/ITS Steering Committee and Parker-Young, June 1998.

Exhibit VI-3
STATUS OF STATES IN THE CVISN DEPLOYMENT PROGRAM



ITS/CVO program areas include (1) Safety Assurance – to assure the safety of commercial drivers, vehicles, and cargo through access to information on inspections and crashes, and automated inspections and reviews; (2) Credentials Administration – to improve deskside procedures and systems for the applications, purchase, and issuance of credentials, and data exchange; (3) Electronic Screening – to facilitate the electronic identification of size, weight, safety, and credentials data, including automated screening and clearance of commercial vehicles and international electronic border clearance; and (4) Carrier Operations – in the public sector, to manage the flow of commercial vehicles, including travel information, hazmat incident response; in the private section, to lead in the deployment of fleet and vehicle management technology to improve motor carrier safety and productivity[4]. CVISN includes standards for communication technologies to promote interoperability and efficiency. TEA-21 requires that ITS projects funded from the Highway Trust Fund must be consistent with the National ITS Architecture and applicable standards.

[4] *Commercial Vehicle Information Systems and Networks (CVISN) Briefing,* presented by the Federal Motor Carrier Safety Administration, February 2, 2000.

ITS AT BORDER CROSSINGS[5]

Implementation of the North American Free Trade Agreement (NAFTA) provisions and partial achievement of the Agreement's objectives have greatly impacted commercial vehicle operations and enforcement of the laws and regulations affecting such operations. As a result of NAFTA, there is an increase in the number of foreign vehicles in the U.S., leading the U.S. to expand its presence along the borders and within the country at a time when resources are becoming more scarce. ITS/CVO technologies will enable the U.S. to make more efficient use of available resources by readily identifying who is complying with the safety standards. U.S. enforcement efforts can then be targeted on those carriers, drivers, and vehicles that are not in compliance.

One of the purposes of the LATTS was to provide general direction for deploying ITS/CVO technologies to their most effective use at the border crossings. This required identification of those aspects of the current border crossing system that constrain the flow of commercial traffic and that may be amenable to the use of ITS/CVO technologies.

Commercial vehicles crossing the U.S., Canada, and Mexico borders are subject to laws and regulations pertaining to the vehicle, operator and cargo. The current process involves several sequential steps, each requiring a vehicle to stop. The stopping points often become congested with long queues developing. Each stopping point adds time to the total journey. The current process also includes a large number of parties, each requiring an exchange of data, some of which is exchanged multiple times. This redundant process is inefficient since much of the data could be shared among the stakeholders at the various stopping points.

To the extent that ITS/CVO technologies and information systems can reduce the number of required stops or the time spent stopped, or improve upon the overall flow of information, they constitute potential tools for facilitating trade traffic, improving the effectiveness of border processes, and promoting international trade.

Vision of Border Crossings

The primary mission of the International Border Clearance Program (IBCP) is to promote the use of ITS/CVO technologies and information systems so as to 1) facilitate enforcement of Federal Motor Carrier Safety Regulations (FMCSRs), 2) expedite the movement of safe and legal commercial vehicles at the Mexican and Canadian borders, and 3) to the extent possible, meet the needs of the multiple agencies and border stakeholders, such as Customs, Immigration, Agriculture, and carriers and brokers of the three nations. The vision of the program is of a “seamless, non-stop border for safe and legal commercial traffic.” Realization of this vision would permit commercial vehicles to transit a border crossing at speed. Achieving a non-stop border will require each agency to

[5] *ITS/CVO Cross-Border Strategic Plan,* prepared by the Motor Vehicle Projects Office, Cambridge, MA, prepared for the FHWA and U.S. Department of Transportation, July 1996.

develop non-stop procedures. ITS/CVO technology options can play an important role in supporting the non-stop procedures of each of the border stakeholders. However, to be most effective, stakeholder coordination is needed to avoid duplication of efforts and requirements and to ensure compatibility among the technologies and systems adopted.

The goals of the IBCP are to apply ITS/CVO technologies and systems so as to:

1. Facilitate safe and legal commercial traffic,
2. Improve the border crossing process, and
3. Support the growth in international (North American) trade.

Operational Concept

The International Border Clearance Program (IBCP) Operational Concept makes the following three assumptions: 1) all underlying border requirements will continue to apply, 2) participation in the automated programs will be voluntary, and 3) the system will maintain the capability to accommodate non-automated traffic. To participate in the automated border crossing a vehicle must be equipped with an Automated Vehicle Identification (AVI) tag that contains the required carrier, vehicle, operator, and cargo information as defined by each of the border authorities. As the vehicle approaches and crosses the border, the AVI tag will be queried multiple times to identify the vehicle and possibly to extract other information. The operational concept is composed of several elements.

Pre-border Activities

The automated process presumes that a substantial amount of the business transactions have taken place prior to the vehicle arriving at the border. Most of the information flows can be accomplished electronically. In many cases, the current process requires that the same or similar data be supplied to two or more agencies. In this operational concept, the data requirements are coordinated among agencies to permit a one-stop filing of information.

Tolls

Toll payment can be automated when vehicles approaching the toll area are weighed and classified by Weigh-In Motion (WIM) and Automated Vehicle Classification (AVC) systems. This information will be combined with the vehicle's identification established by AVI readers. Tolls will be automatically calculated and deducted from the carrier accounts. Vehicle drivers will receive a signal indicating that the toll has been paid or that the balance is low. Enforcement systems, such as license plate readers, will help to track accounts with insufficient funds.

Automated Primary Clearance

This function can be completely automated when vehicles traveling in a by-pass lane are queried by an AVI reader to identify the vehicle for Customs and INS purposes. This information will be associated with data pre-filed with the inspection services. Data pre-filed by the shipper or customs broker with the Federal Inspection Services will allow the inspection services to make a decision either to inspect or release prior to the arrival of the vehicle at the border. Clearance decisions can be made by each agency independently and then combined into single decision that is relayed back to the driver using roadside and in-cab signals. If all agencies give a positive clearance decision, the vehicle will be given a green light to proceed into the country. If any one agency wants to inspect the vehicle, the operator will be given a red light and directed to the secondary inspection area.

Secondary Inspection

This function is not significantly changed under the IBCP operational concept. However, vehicles participating in the automated system should need fewer referrals to secondary inspections for purely administrative purposes. For those vehicles directed to the secondary inspection area, inspection may be expedited because 1) changes will be implemented electronically and will be faster than with the current manual processes, and 2) advanced technologies can be employed to increase the effectiveness of current processes.

Safety Function

This function is being added to the current process. However, the automated system will permit safe and legal vehicles to proceed without stopping at the border. The general process involves vehicles being queried by an AVI reader for the vehicle identification and any transportation safety information that has been written to the vehicle tag. This information can then be linked to other safety data such as those accessible through the Commercial Vehicle Information System Network (CVISN) concept and any information that may be developed through a safety pre-clearance process.

Border Crossing System Architecture

The IBCP will result in the development of a seamless border crossing system, the International Border Clearance System (IBCS), that will allow all border requirements to be satisfied without requiring safe and legal vehicles to stop. The system implements multiple ITS/CVO technologies to meet the program objectives and integrates the individual components of the border crossing process.

The integrated system design is dependent on the establishment of system specifications by the owners of the various border processes. There are three functional components that compose the system: 1) automated toll collection, 2) automated primary clearance, and 3) automated border safety. For borders with toll facilities, this system provides an automated toll collection alternative that eliminates the need for qualified vehicles to stop for toll payment. The primary inspection component is automated, thereby enabling safe, legal, and compliant traffic to travel through a border at speed while satisfying all the Federal Inspection Services' entry requirements. Vehicle safety requirements are incorporated into the border crossing process and are automated to eliminate the necessity for vehicles to stop at safety inspection facilities. The advantages of an integrated system accrue from shared use of devices and information.

System configurations will vary among border crossings based on actual conditions, such as toll requirements, physical safety inspection requirements, and land availability. The system employs various ITS/CVO technologies that can be classified into the following seven categories based on function: 1) Electronic Data Interchange 2) Automated Vehicle Identification (AVI), 3) RF, Signal, and Signage Communication with the Driver, 4) Vehicle Detectors, 5) Enforcement Equipment, e.g., automated license plate readers, 6) On-site Measurement, WIM and AVC, and 7) Roadside Processors. Individual computer systems are needed by each of the border agencies, but these are specific to each agency and not included among the joint use technologies.

Electronic Data Interchange

Expediting the flow of information is central to the success of an automated, integrated border system. Automation of the primary inspection function depends upon having commercial data available before the shipment reaches the border. This can most effectively be done by using Electronic Data Interchange (EDI) between traders and the inspection services. Properly designed EDI systems will enable information to be sent to all appropriate parties with a single submission. Transportation functions will depend upon ready access to safety and credential data. For this function, the IBCP relies upon the ongoing CVISN development. For functions that do not require advanced notification, information can be carried on the vehicle. However, unlike paper-based system, these data can be carried on the transponders and read from roadside readers.

Automated Vehicle Identification (AVI)

Being able to correctly identify each participating vehicle is critical to the functionality of the IBCP. The vehicle identification, when linked to Customs, INS, Transportation and other databases, provides the basis for permitting the vehicle to enter the country without stopping for an inspection. Through the use of transponders, readers and antennas, specific vehicle identification information can be sent and received. Type III AVI transponders would contain such information as unique ID number identifying the carrier and the tractor, unique shipment number, the driver's INS ID number and PIN, variable information relating to the cargo and other vehicle components, and toll account information.

Communication with the Driver

Information is received from the shipper prior to the vehicle arriving at the border crossing and is then verified when the vehicle crosses the AVI reader at the border crossing. The system must communicate with the vehicle to direct the driver to the appropriate lane. For the system to communicate this information to the driver, a variety of technologies can be implemented such as conventional signs and variable message signs. The use of red light/green light devices both in-cab and at the roadside can also be used to direct the operator through the bypass lane or to the primary inspection booth.

Vehicle Detectors

Vehicle detectors, e.g., inductive loops, aid in managing the flow of traffic and associated data as commercial vehicles transit the dedicated lane. They are also used to trigger enforcement systems for unauthorized or non-compliant traffic in the dedicated lanes.

Enforcement Equipment

The IBCS is designed for those carriers who are considered low-risk. There are, however, many scenarios when enforcement equipment may be necessary. If an unauthorized vehicle travels through the bypass lane the roadside processor will trigger an enforcement system. Technologies such as license plate readers and video cameras will be implemented into the enforcement system.

Weigh-in-Motion (WIM) and Automated Vehicle Classification (AVC)

At toll facilities that use a weight-based toll structure, WIM and AVC equipment would be installed in advance of an upstream AVI antenna and reader. AVC systems use inductive loops and pressure sensors to classify vehicles by parameters such as number of axles and distance between axles. WIM systems determine vehicle weight from measurements on axles as they travel across sensors. These two types of equipment would determine the vehicle's axle and gross weights while the vehicle is in motion. The information would be passed to a downstream AVI roadside reader. The implementation of WIM and AVC technology creates a non-stop process at the toll facilities and generates information for other agencies interested in weight and vehicle class data.

Roadside Processor

The roadside processor is the interface between the border agencies' computer systems, the automated lane at the crossing, and the vehicle. It receives vehicle information from the AVI roadside reader, the vehicle detector, the exit detector, and the various independent inspection services' computer systems. It processes the information and provides data to the driver feedback system. The roadside processor also provides lane control through driver feedback. By interfacing with the various independent computer systems, the roadside processor enables the multiple release decisions of the border agencies to be summarized into a red light/green light message to the vehicle driver.

Customs, INS and the other regulatory agencies will maintain independent computer systems that support their specific regulatory functions. Linking these systems to the IBCP through the roadside processor ties the total border crossing process together. With this interface, information is exchanged yet each agency continues to be responsible for its own system. The development by the Treasury Department of the International Trade Data System will also provide support to the separate agency functions.

SUMMARY AND CONCLUSIONS

This discussion has examined a number of emerging technologies and their potential application to the LATTS Region. Intelligent transportation systems

(ITS) can play an important role in maximizing the efficiency and safety of highway travel in the LATTS Region. Recognizing this, many states have plans to or are already deploying freeway management systems and other ITS components that enhance operations. It is recommended that the Alliance members work together to create a seamless network of ITS applications. This goal for a seamless network dovetails with the U.S. Department of Transportation's objective for national compatibility and interoperability of ITS deployments, which is supported by requirements that federally funded projects containing ITS elements be consistent with the National ITS Architecture and approved standards.

ITS applications primarily should be located in the urban areas of the Region and at border crossings. Applications in the rural areas should also be considered. The most notable rural ITS application at this time is a "mayday" emergency notification system, which can contribute to enhanced safety and security.

As part of the assessment of ITS within the Alliance Region, the current status and planned program for ITS being undertaken by individual Alliance members were reviewed. The separate LATTS reports for each Alliance member describe the ITS program of the respective Alliance members as it existed at the time this review was undertaken. Most Alliance members have an established plan and proposed methodology for deployment of ITS within the state/commonwealth. These plans closely parallel the goals as set forth within the national ITS/CVO program. However, many of the Alliance members are currently working only within their representative state and little state-to-state interaction is being undertaken. Thus, the overall goal of seamless travel has not been fully realized.

ITS plays a vital part in CVO management, and it can also play an instrumental role in CVO activities within the LATTS Region as a whole. Recognizing the role of ITS within CVO management, most states are already in the process of implementing technologies that will greatly improve the way that CVO business is conducted and the manner in which commercial vehicles are moved through their respective states. These programs will greatly enhance the efficiency and safety of commercial vehicles operating within individual states.

ITS is an ever changing field of technological advances in the transportation of goods via the nation's infrastructure. The ongoing development of ITS technologies and especially CVISN advancements will only serve to further enhance CVO within the LATTS Region.

Exhibit VI-4 is a summary of Alliance members' current ITS/CVO activities (as of the time of this review). This exhibit breaks down the Alliance member's programs into three distinct categories, all vital to achieving the CVISN goal of seamless travel. The **intrastate** (in-state) programs are the initial step into full CVISN development. These programs set the framework for state-to-state interaction. Many of these programs are designed to technologically bring the states up-to-date. Most of the Alliance members have the same general set of

Exhibit VI-4
ALLIANCE MEMBERS ITS/CVO ACTIVITIES

	INTRASTATE			INTRA- W/ POSSIBLE INTER-			INTERSTATE			STATE TOTALS
ALABAMA	0	0	0	0	0	0	1	0	0	**1**
ARKANSAS	0	0	0	0	0	0	1	0	0	**1**
FLORIDA	7	0	0	1	0	0	0	0	0	**8**
GEORGIA	3	0	0	0	0	0	0	0	0	**3**
KENTUCKY	6	0	0	2	0	0	4	0	1	**13**
LOUISIANA	20	1	3	2	0	2	2	0	0	**30**
MISSISSIPPI	8	0	0	3	0	0	1	0	0	**12**
NORTH CAROLINA	4	0	0	1	0	0	1	0	0	**6**
PUEROT RICO	0	0	0	0	0	0	0	0	0	**0**
SOUTH CAROLINA	7	0	0	1	0	0	0	0	0	**8**
TENNESSEE	12	0	0	3	0	0	1	0	0	**16**
TEXAS	4	1	1	1	0	0	0	0	0	**7**
VIRGINIA	15	0	1	5	0	3	1	0	0	**25**
WEST VIRGINIA	6	0	0	1	0	0	0	0	0	**7**
PROGRAM TOTALS	**99**			**25**			**13**			

LEGEND

Project Timeframe
- ITS Programs Scheduled to be Implemented Prior to 2005
- ITS Programs Scheduled to be Implemented After 2005
- Date Not Determined

Project Classifications
- INTRA – ITS Programs Within Member State
- INTER – ITS Programs Between Member States

program goals. However, the steps taken to reach these goals can vary greatly from state to state. When completed, the combination of these programs will set the course for CVISN deployment.

The **intrastate programs with interstate implications** are those programs that are currently planned for in-state use, but either will report to a national clearinghouse (IRP, IFTA) and then be distributed to other states, or could have national implications at a later date (national identification system). The current goal of these programs is to ensure that each state has a statewide reporting method in place. At some point in the future, the statewide programs could be tied into a national or neighboring state's program, allowing for state-to-state interaction.

The third group of programs, **interstate programs**, are those programs already designed for state-to-state interaction. This set includes the joint weight stations that many states already have planned, and other programs where individual states are working jointly to enable more efficient travel across state borders. These programs are in direct correlation to the CVISN goal of seamless state-to-state travel.

The role of ITS for CVO operations within the LATTS Region as a whole requires an approach that many of the states are just now beginning to realize. Alliance members must be willing to complete projects and programs jointly with one another to create a seamless CVO network within this Region and eventually the nation as a whole. This would enable commercial vehicles to move freely between state borders via sharing of weigh stations, use of the same screening technologies, and a standardized commercial vehicle identification system. It is recommended that the LATTS member states continue to work toward this common goal.

In summary, ITS/CVO operations are part of the means by which the goals of the LATTS Region can be achieved. ITS will aid the Region in enhancing the regional competitive position for Latin American trade with an efficient, safe, and interconnected system. Each of the Alliance members has started working toward an ITS/CVO plan that will greatly enhance commercial vehicle travel within the entire LATTS Region. By taking these plans further and including a regional component, the Alliance Region as a whole will benefit from safe and more efficient movement of commercial vehicles.

GLOSSARY OF ACRONYMNS

AVC – Automated Vehicle Classification
AVI – Automated Vehicle Identification
AVL – Automated Vehicle Location System
CCTV – Closed Circuit Television
CVISN – Commercial Vehicle Information Systems and Networks
CVO – Commercial Vehicle Operations
EDI – Electronic Data Interchange
FHWA – Federal Highway Administration
FMCSA – Federal Motor Carrier Safety Administration
FMCSRs – Federal Motor Carrier Safety Regulations
GPS – Global Positioning System
IBCP – International Border Clearance Program
IBCS – International Border Clearance System
ISTEA – Intermodal Surface Transportation Efficiency Act
ITS – Intelligent Transportation Systems
NAFTA – North American Free Trade Agreement
TEA-21 – Transportation Equity Act for the 21st Century
WIM – Weigh-In-Motion