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# **South Dakota ITS/CVO Business Plan**

## **Study SD97-10**

### **Executive Summary**

**prepared by**

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16. Abstract <p>This report defines an ITS/CVO program for the State of South Dakota. It is a Business Plan to guide the deployment of Intelligent Transportation Systems (ITS) technology for improving commercial vehicle operations (CVO) in South Dakota.</p> <p>This ITS/CVO Business Plan includes a description of the current CVO environment in South Dakota; a mission, guiding principles, goals, and objectives for the state ITS/CVO program; a coordinated program of ITS/CVO projects that address state and motor carrier goals; and an organization and management framework for accomplishing the ITS/CVO program.</p> <p>The Business Plan was developed by Cambridge Systematics in close collaboration with the South Dakota ITS/CVO Technical Panel.</p>			
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# Executive Summary

This report presents the recommendations of the business planning effort by the state's commercial vehicle operations (CVO) regulatory agencies and motor carrier industry to guide the deployment of Intelligent Transportation Systems (ITS) technology for improving CVO regulation and operations in the state of South Dakota. This effort and this report were produced under the auspices of the South Dakota Department of Transportation's Office of Research that convened a Technical Panel of state, federal, and motor carrier representatives for the express purpose of directing the development of an ITS/CVO Business Plan for the state.

The purpose of the business planning effort was to:

- Describe the current CVO environment;
- Develop a strategic direction for ITS/CVO activities in the state;
- Propose a coordinated program of ITS/CVO projects that address state and motor carrier needs and goals;
- Define an organization and management framework for accomplishing the ITS/CVO projects; and
- Develop materials that will communicate the findings of the Business Plan to government officials and the motor carrier industry and secure support for the ITS/CVO program and its component projects.

This report includes the first four elements of the business planning effort. The fifth element, the presentation materials, are produced separately.

Commercial vehicles are the primary freight movers in the nation and in South Dakota. Trucks move over 80 percent of the state's commodities, and two-thirds of its communities rely solely on trucking to deliver their goods. Safe and efficient motor carrier operations are essential to the future economic growth and competitiveness of South Dakota; contribute significant revenue to the state budget; and are major factors in highway safety.

Rising costs, limited resources, and increased competition are general challenges facing both motor carriers and the state agencies responsible for regulating them. Agencies have fixed or declining funding and staff levels with which to ensure safe and financially responsible motor carrier operations. In an environment of serious funding constraints, agencies and programs must compete for scarce resources. For motor carriers, operating as efficiently as possible, with minimal delays from regulatory activities, is essential to remain competitive.

ITS technology is being applied in CVO programs throughout the country to improve regulatory activities and carrier operations. It includes advanced and emerging technologies in fields such as information processing, communications, and electronics. ITS/CVO goals are to streamline administrative procedures and improve the safety and productivity of trucking.

The goal of the state agencies and industry representatives in the business planning effort was to develop and coordinate projects that apply ITS technology and lead to more efficient, cost-effective, and safer motor carrier operations. The approach that was followed to produce the ITS/CVO Business Plan was based on:

- Participation of a broad cross-section of motor carriers and agencies;
- Recommending projects that have a good chance to succeed, address immediate needs of agencies and carriers, are likely to generate benefits for both the state and industry, and serve long-term goals; and
- Consideration of the national ITS/CVO program to ensure that the state's Business Plan will leverage opportunities presented on a national level, and to allow for compatibility with the development of national ITS/CVO standards while providing technologies and solutions that are most appropriate for South Dakota.

The Business Plan approach was inclusive and user-oriented and consisted of:

- Interviews and meetings with the Business Plan Technical Panel;
- Interviews with other stakeholders, including managers and operations staff from state agencies, and motor carriers and bus operators; and
- Review of relevant literature, including national directives; state and regional institutional issues studies; ITS/CVO business plans from other states; and regional ITS/CVO plans.

South Dakota is a participant in a 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 capability of motor carriers to use personal computers to send forms to state agencies and receive credentials back. Increasingly, the state has opportunities to participate in ITS/CVO projects that enable its agencies and motor carriers to further explore new ways of doing business. Current examples of projects are the PRISM project and the CVISN initiative.

The PRISM (Performance Registration and Information System Management) project was entitled by the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991. It was established to demonstrate a system to link the registration of a commercial vehicle with the carrier's safety performance. Five states developed and tested the concept, and the project was effective in improving carrier attitudes toward safety, and the overall safety of their operations. The project is now expanding to additional states. South Dakota has been invited to participate.

The CVISN (Commercial Vehicle Information Systems and Networks) initiative is the major ITS/CVO project in the nation, and it will strongly influence the character of all other ITS/CVO projects and programs for years to come. The CVISN Model Deployment began in 1996 with awards to eight states to develop specific ITS/CVO capabilities such as electronic transactions between carriers and the state and establishing links among different state agencies so these agencies can exchange data electronically. The CVISN initiative will be funding additional states each year starting in 1998. Funding is competitively awarded, and states must participate in a defined process in order to become eligible. The goal of the project is for states, the Federal Government, and motor carriers to be able to electronically exchange information amongst one another. For example, in South Dakota, the Highway Patrol would be able to receive information from the Public Utilities Commission on the insurance status of carriers and this would enable officers to better enforce regulations; and, as another example, carriers and agencies would be able to conduct business back and forth by computers, reducing paperwork and also time.

Current participation in projects and new opportunities raise a number of questions that are answered in the ITS/CVO Business Plan: Should current projects be continued? What new projects should be considered? What is the value to the state of these projects? What is the value to industry of participation in projects? The state does not have the resources to say yes to everything. It needs a framework to provide direction and guidance for its ITS/CVO activities. The Business Plan provides this framework and will form the basis for an effective state CVO program.

Some 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 "make ends meet," that is, regulate the commercial vehicle industry and provide customer services at the same time that staffs are smaller and budgets are not increasing. Operational tests conducted in many states of various new technologies and services, actual deployments of certain systems such as those enabling "prequalified" trucks to bypass weigh stations, and institutional issues studies on state and regional levels, have shown that there are significant time and cost savings to be gained from the well-thought out application of ITS technologies to the regulatory procedures of state agencies. These savings accrue to both state and industry.

Only very recently have efforts been made to quantitatively assess the benefits to be gained from ITS/CVO technologies and services. The lack of significant numbers of fully functional and operating systems applying these technologies and providing these services still hinders definitive conclusions. However, the study conducted in 1996 by the American Trucking Associations (ATA) Foundation to explore the impact of ITS technology on regulatory compliance costs for motor carriers calculated positive benefit/cost ratios for the two services that are most frequently planned for state programs, automated administrative processes and electronic clearance. Automated administrative processes replace the manual review and processing of carrier registration, license, and permit applications, and enable computer (i.e., paperless) transactions between motor carriers and agencies. Electronic clearance is the screening of commercial vehicles for size and weight, safety, and credentials compliance at highway speeds to enable compliant vehicles to bypass a weigh station.

The National Governors' Association published a study in December 1997 to assess the budget implications on states of adopting ITS/CVO services, in other words, looking at benefits and costs to state agencies instead of motor carriers. Although the findings could not be reviewed in time for publication of the Business Plan, preliminary results of draft reports indicated that electronic credentialing (essentially equivalent to automated administrative processes in the ATA Foundation study) would produce substantial benefits relative to costs. Benefits include time that is saved reviewing applications, key-entering data, and issuing credentials; and costs saved in paper and mailing. These benefits are expected to accrue to states in spite of relatively large costs to develop capabilities and systems that support electronic transactions. Benefits from electronic screening appeared to be somewhat less certain, largely because of the considerable cost of developing the infrastructure and incorporating the various technologies. The benefits to be gained from applying ITS technology depend on a number of factors, some of which are, for states, number of registered motor carriers, motor carrier participation rates, existing capabilities, and workloads and existing staff; for motor carriers, size of fleets and operating characteristics of various kinds.

The literature reveals, nonetheless, that ITS/CVO technologies and the improvements in regulatory procedures that generally come with technology applications, offer states the best potential solutions to the problem of maintaining regulatory oversight in a context of fixed or declining resources.

South Dakota will benefit most from projects that address current problems and respond to the specific needs of motor carriers and individual agencies or several agencies; that all relevant agencies and the motor carrier industry agree should be implemented; and that will be developed and deployed in a coordinated manner.

Problems and needs from both state and motor carrier perspectives were identified during several steps of the business planning process. Motor carriers expressed the following problems:

- Too much time is spent trying to comply with regulations; they cited delays at weigh stations and application and issuance procedures;
- Too much paperwork is involved in obtaining credentials and fulfilling other compliance requirements;
- Highway safety needs to be improved, and enforcement officers could spend more time on inspections and use available technologies to help improve safety; and
- Carriers need more information about regulations.

State personnel expressed these needs:

- Agencies should share information so they do not duplicate efforts, and motor carriers would not have to provide the same information to multiple agencies;



- Agencies should automate many of their processes and procedures to save time and improve accuracy; many said that automation would help offset the reductions in staff; and
- Agencies should provide more information of all kinds to carriers.

A strategic direction was defined for ITS/CVO activities with goals and objectives. The strategic goals are:

- Improve the safety and efficiency of CVO;
- Increase the efficiency of the state CVO regulatory processes;
- Safely utilize the capacity of the state's transportation system while preserving its integrity; and
- Provide better service to industry.

These goals and objectives will accomplish the vision of South Dakota's ITS/CVO program. This vision was developed by the Technical Panel to describe what is hoped to be the end result of projects undertaken in the program:

- Enhance safe and efficient movement of commercial goods and passengers through the application of technologies, improved business practices, as well as interagency and industry cooperation.

Problems and needs identified by motor carriers and state personnel were refined according to the goals and objectives that were agreed upon by the Technical Panel, and developed into project concepts.

The projects in the Business Plan are recommended for implementation by the year 2000, although several of them will not be completed by 2000. The plan includes 12 projects that were recommended on the basis of a number of factors, including:

- Addressing immediate needs of state agencies and motor carriers;
- Addressing strategic goals and objectives as defined by the Technical Panel;
- Providing benefits to state agencies and carriers alike;
- Presenting minimal technical and institutional risks;
- Having identified funding, or good potential of being funded; and
- Adhering to the principles and objectives of the CVISN initiative.

Costs to develop the projects are estimated to total approximately \$2,960,000 (Figure ES.1). It is anticipated that federal funding will account for 47 percent, or \$1,393,000; and that state funding will account for 53 percent, or \$1,567,000. In order to decrease the state burden, additional federal funds and private funds will be sought for these projects. The Business Plan describes a number of potential sources.

The recommended projects are described in detail in the report. They contribute to a targeted, coordinated, and well-balanced program of ITS/CVO activities that respond to motor carrier, individual state agency, and state CVO needs. In addition, these activities enhance the national CVISN infrastructure.

A summary of the ITS/CVO program is as follows:

1. The program emphasizes enforcement and safety. Projects in the Business Plan stress the importance of carrier, vehicle, and driver safety. ITS technologies such as automated inspection software and automatic vehicle identification will help enforcement officers perform more safety inspections, and perform safety inspections on vehicles that are at risk of endangering public safety. Development of a system to link vehicle registration to safety performance (the PRISM project) will help ensure that a carrier is operating safely. An automated system for issuing and managing permits for oversize and overweight loads will mean that enforcement personnel who now perform administrative functions can spend more time enforcing commercial vehicle regulations. Safety information also will enter state and national networks and databases more reliably and quickly, thus enhancing enforcement efforts both in South Dakota and elsewhere.
2. The program encourages the automation of regulatory processes and procedures, and the associated changes in the way the state and motor carriers do business. Automation of manual, paper-based procedures is likely to have a large and almost immediate impact on productivity, which is needed in agencies that have seen recent cutbacks. Installation of a new information system for vehicle registration and fuel taxes will not only improve the efficiency of existing processing procedures, but also will enable carriers to obtain registrations in an entirely new way – by personal computer or the Internet. In the future, carriers may be able to obtain all necessary registrations and permits through a single source in the state after data linkages are established between all credentialing agencies. Other projects call for the automation of routing and issuing permits for oversize and overweight vehicles; of entering inspection, citation, and accident data; and of weighing trucks while they are in motion. All of these projects are expected to result in significant time savings that can accrue to carriers as well as to state agencies.
3. The program enhances outreach to motor carriers. Two projects in the Business Plan specifically address the need for carriers to obtain more information from state agencies. Compliance may benefit significantly from carriers receiving new regulatory information, and customer service certainly will be improved. In addition, because carrier interest in and support of ITS/CVO programs are generally lukewarm, outreach and communication must be important elements in ITS/CVO efforts. Projects that respond to needs identified by motor carriers help strengthen lines of communication, the amount of buy-in from carriers to the ITS/CVO program, and aid the expansion of the program.

Figure ES.1 Project Costs and Funding Sources

Projects	Development Cost	Potential Funding Sources			
		PRISM	CVISN	Other Federal	State
1. Proactive information dissemination	\$ 30,000				\$ 30,000
2. CVO database architecture	150,000		75,000		75,000
3. Automated routing and permitting	653,000				653,000
4. Roadside data transfer	93,000			74,000	19,000
5. Two-dimensional (2-D) bar coding	52,000	43,000			9,000
6. Automated inspection, citation, and accident reporting	113,000	93,000			20,000
7. Linking registration to safety performance	343,000	283,000			60,000
8. Information helpline	30,000				30,000
9. Automatic vehicle identification (AVI)	96,000	80,000			16,000
10. Safety data access	250,000		125,000		125,000
11. Electronic credentialing	1,000,000*		500,000		500,000
12. Weigh-in-motion	150,000			120,000	30,000
<b>Total</b>	<b>\$2,960,000</b>	<b>\$499,000</b>	<b>\$700,000</b>	<b>\$194,000</b>	<b>\$1,567,000</b>

\* This cost is expected to be significantly reduced as a result of implementation of the previously identified projects.

## ■ Recommendations

Based on the work conducted to produce an ITS/CVO Business Plan for South Dakota, the following recommendations are presented for consideration by the South Dakota DOT Research Review Board:

1. It is recommended that the South Dakota ITS/CVO Business Plan be approved for implementation. Throughout the country, ITS technology is being applied in CVO programs to produce more efficient and more cost-effective CVO regulation, and more efficient, cost-effective, and safer motor carrier operations. The projects included in the plan will target and coordinate the state's investments in ITS technology in order to conserve resources and apply those technologies that will be most beneficial to the operations of state agencies and motor carriers in South Dakota.
2. It is recommended that a Steering Committee be established to direct the South Dakota ITS/CVO program, make policy and funding decisions related to the program and individual projects, and coordinate the scheduling of projects through the lead agency assigned to each project. It is recommended that the committee comprise members of the Technical Panel that was convened to direct the development of the Business Plan.
3. It is recommended that the established Steering Committee develop an outreach, education, and training program that will help promote the ITS/CVO program and Business Plan to motor carriers. It is recommended that this program include the following elements:
  - **Motor Carrier Recruitment** – A specified number of carriers will be recruited for participation in ITS/CVO projects at the appropriate times. The Steering Committee, which includes two motor carriers and a representative from the South Dakota Trucking Association, will determine optimum carrier characteristics, and will recruit and maintain the participation of carriers for the duration of the projects.
  - **Industry Communications** – A comprehensive marketing and communications plan for disseminating information to South Dakota motor carriers will be developed. Communications tools may include broadcast fax notices, an initial ITS/CVO program brochure, quarterly newsletters, and training kits.
  - **Motor Carrier Training** – Carriers that are selected to participate in ITS/CVO projects will require additional program education and training. A training program to educate owners and managers about projects and their potential impacts will be developed. The Steering Committee will coordinate training sessions with the South Dakota Trucking Association.
  - **ITS/CVO Showcase** – A showcase of technologies and services will be developed at the end of the first year of the ITS/CVO program. This will communicate

accomplishments to the motor carrier industry and aid in expansion of the program. Printed materials, audiovisual presentations, and hardware and software demonstrations will be featured.

4. It is recommended that the established Steering Committee refine project concepts and develop and issue requests for proposals (RFPs). Projects are scheduled to start immediately upon approval of the Business Plan. Project concepts in the Business Plan must be refined in order to draft preliminary work plans. If the Steering Committee and project lead agencies decide that consultants will be involved in project work, RFPs must be developed and issued, and criteria for making selections must be determined.
5. It is recommended that the established Steering Committee monitor closely the process by which the FHWA will award the next round of CVISN funding, and direct efforts toward securing CVISN funding. CVISN Deployment Incentive Funding is discretionary and competitive, and states that wish to be awarded funding must actively pursue it. In addition to completing defined steps, states must demonstrate institutional and technical capabilities which mitigate the risks associated with deploying new technologies and services. Therefore, it was recommended that project refinement and RFP development be started immediately so that projects can begin and institutional arrangements and collaboration can be forged. The advantages of securing CVISN funding are the size of the awards and the flexibility of what are regarded as eligible uses. A disadvantage is the need for states to provide an equal match, which can be daunting given the size of the awards. In recommending that the state pursue funding, it is noted that the Business Plan is built upon the expectation that necessary funding will be provided for projects. Only if all projects are implemented will the state and its motor carriers realize maximum benefits.
6. It is recommended that the Business Plan be updated in January 2000. It is likely that technologies, policies, and funding sources will have changed since the inception of the plan. At that time, the Steering Committee will convene to discuss the status of the ITS/CVO program and component projects; status of funds; new sources of funding; refinement of projects implemented in the months just before January 2000; new projects; and affirmation or modification of the strategic direction for ITS/CVO activities in the state.

