**Minnesota Department of Public Safety and Department of Transportation**
**Joint Report on the Expenditure of Section 164 Transfer Funds**

03 - 0054

**Status Report for FFY01 Section 164 Transfer Funds**

The funds transferred in Federal Fiscal Year 2001 were designated for improvements in access and utility of driver license record information (especially drivers involved in DWI incidents). The agreement between Mn/DOT and DPS was reached in February, 2001, and was approved by NHTSA later that same month.

Within DPS, the project is known as the Improved Minnesota Driver's License Information System (IMDLIS) project. Attached are three documents that provide more detail about IMDLIS.

- The IMDLIS project status report form provides an overview of progress on the project and plans for future deliverables.
- The IMDLIS project scope document addresses the project's mission, explains the assumptions on which this project operates, and provides detail about affected organizations.
- The feasibility study report conducted by Gartner Consulting (supported by federal funds, but not funds from Section 164). This document provides the in-depth background that was developed prior to any expenditure of the Section 164 funds.

**Status Report for FFY 2002 Section 164 Transfer Funds**

A second round of funding was transferred in Federal Fiscal Year 2002. In February, 2002, Mn/DOT and DPS agreed to utilize the funds to update and expand the Transportation Operation Communication Center's (TOCC) in Minnesota. These enhancements will aid in the enforcement of impaired driving. The plan was approved in by NHTSA in late February, 2002.

Attached is a document (NHTSA – Federal Fiscal Year 2002 Transfer Funds Update) that contains an overview of the scope of the project, provides details about how the Section 164 funds are being used in the TOCC project, and sets out a timeline for the expenditure of the funds and deployment of the equipment.

**FFY03 Section 164 Transfer Funds**

Because Congress has not yet appropriated the FFY03 highway funding, there are not currently any Section 164 transfer funds available to Minnesota. We estimate that

approximately $8,500,000 will be made available fore Hazard Elimination and Alcohol programs, and a joint DOT.DPS work group has made preliminary plans for the funds The exact dollar amounts will change once we know how much funding is available. The following table shows the initial plan for the FFY03 funds.

| **Project** | **Program Area** | **Percentage of Funds Allocated** | **Estimated Funding Amount (if $8,500,000 in 164 funds is made available to Minnesota)** |
|---|---|---|---|
| Replacement of Twisted End Guardrails *(represents approximately 10% of work to be done statewide)* | 164HE | 35% | $3,000,000 |
| Further Deployment of TOCCs *(continuation of project started with 164AL funds in FFY02)* | 164AL | 35% | $3,000,000 |
| Safety Improvements to Roadways *(above and beyond the HE activities planned for FFY03)* | 164HE | 18% | $1,500,000 |
| Towards Zero Deaths Alcohol Safety Initiatives *(enforcement, coalition building, and roadway improvements associated with alcohol-related crashes in TZD communities)* | 164AL | 12% | $1,000,000 |

# IMDLIS

DVS Driver & Vehicle Services

## Project Status Report Form

### IMPROVED MINNESOTA DRIVER'S LICENSE INFORMATION SYSTEM PROJECT PROGRESS REPORT

**Project Name: Improved Minnesota Driver's License Record System Project (IMDLIS)**

**Report for FY 2002**

**Project Sponsor: Office of Traffic Safety Director, Kathy Swanson and Driver and Vehicle Services Director**

**Project Champion: Pat McCormack**

**Project Manager: Alan Greene**

**Supporting Law: 2001 Special Session Laws Chapter 8, Article 4, Section 10, Subdivision 1**

**Brief Project Description**

This mission is to improve the State's management of problem drivers and to reduce the incidence of driver license fraud. The objective is to completely redesign the Minnesota Driver's License information to ensure that enhanced access and utility of driver record information will enable and improve traffic safety and strengthen enforcement of problem driver sanctions, especially drivers involved in DWI incidents.

Project objectives include: improved law enforcement access to information 24/7, both locally and over the Internet; improved reporting and records system through the automation of case management of problem drivers' driving privileges; and allow for interaction with relational databases used by the criminal justice community.

| Project Milestones | Status |
|---|---|
| Formation of Executive Steering Committee to Determine Funding and Project Plan and Timeline | Spring, 2001 |
| Phase One - Feasibility Study and Risk Assessment of the IMDLIS. Other funds than the 164 Transfer Funds were used to support this milestone. | Date of Completion: December 31, 2001 |
| Executive Steering Committee Determines the Scope and Funding for IMDLIS Phase Two | January –February 2002 |
| Hired Project Manager in order to implement project's approved recommendations in Phase Two and Three as outlined in IMDLIS Feasibility Study's recommendations. | Project Manager hired and started August 6, 2002 |

| Project Milestones | Status |
|---|---|
| Project Plan completed and Development iteration schedule | Plan completed for Iteration 1<br>September 2002 |
| Scope Document completed to define boundaries of project | Scope and Assumptions approved<br>October, 2002 |
| Existing workflows for all DVS Units documented with functional requirements for those workflows gathered and documented. | Functional Specifications completed<br>December 2002 |
| Business Process Reengineering Plan completed. | Plan completed and Phase 1 reengineering initiated<br>December 2002 |
| Document Management sub Project | Planned for completion<br>June 2003 |
| Architecture planning | Complete Design Specifications<br>June 2003 |
| Detailed development plan | Complete Technical Specification<br>September 2003 |
| Development of 1st Iteration to support Issuing of DL and to support problem driver hearing reports. | Complete Iteration 1<br>January-February 2004 |

## Accomplishments

1. An approved Scope document that identifies overall mission statement, business objectives, assumptions, organization, high-level architecture, issue and change management processes. The Driver Compliance Improvement Project and the Reduction of Issuance Fraud Project, identified during the Feasibility Study, will be combined in the IMDLIS Project.
2. Additional funding from a grant awarded to DVS for strengthening its Commercial Driver License program will be targeted to assist in improving the DL information system to allow for the electronic transmission of conviction information to other states and relational interfaces with other applications in order to facilitate data collection and interpretation.
3. Executive Steering Committee approved project scope based on Feasibility Study recommendations and InterAgency Agreement signed to begin Phase Two of the project.
4. Completed Project Plan and Functional Specifications, and initiated preliminary business process reengineering.
5. Initiated Business Partner communication channels to ensure that Business Partner needs will be met.

## Key Issues with Resolution Strategy

- Project plan allows for a dual track approach: completing business process redesign improvements at the same time a migration transition strategy and new database is being developed.
- Approvals for project deliverables result from a combination of Sponsor, Steering Committee, and the Project Management Office reviews.
- The Driver Compliance Improvement Project; and the Reduction of Issuance Fraud Project, will be accomplished in parallel with the Database Migration Project, migrating core applications to a relational database.
- Risk Management Plan full definition will be deferred until the Architecture is completed
- Working on strategy with business partners to enlist additional funding for the eventual redesign of the entire DL information system


# IMDLIS

# Project Scope

Prepared by:
Alan Greene
Minnesota Dept of Public Safety
Driver & Vehicle Services
IMDLIS Project Manager
October 17, 2002

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# IMDLIS Project Scope

The Mission Statement, Objectives, Constraints, Timeline, Roles and Responsibilities, Project Organization and Team, in combination, define the scope and boundaries of the IMDLIS Project. All functional requirements (what IMDLIS must accomplish) will support the Mission and Objectives. Changes to the Scope, or if there is a need to include requirements and functionality that do not explicitly support the Scope, will either be "warehoused" for a later project or will require a change order (with supporting Return On Investment) and will need the approval of the Project Manager, the Sponsors, and Steering Committee.

## *Mission Statement*

The mission of the IMDLIS Project is to enhance the access, accuracy and utility of Driver Services information, thereby improving problem driver management and traffic safety, reducing license fraud, and, where appropriate to project mission, improving customer service and improving Driver Services operational efficiencies.

## *Project Objectives*

Specific project objectives include:

1. Focus on a flexible, consistent, and "paperless" e-Government systems approach to the Driver License Information System.
2. Ensure information currency and 24 x 7 access to information by law enforcement and court systems when needed, to improve both public safety operations and customer service.
3. Automate problem driver case management to enable removal of problem drivers from Minnesota roads by authorities and improve public safety.
4. Provide integration between DVS databases and those used by court, law enforcement, and other agencies to ensure that all of the information appropriate to ensuring public safety can be available through a single interface.
5. Improve license issuance process to limit opportunity for applicants to obtain fraudulent driver licenses and to improve customer service.
6. Improve reporting and records management to facilitate law enforcement and court systems access, improve customer service, be responsive to changing conditions, and to support research and decision analysis.
7. Encourage data entry at the source of data to improve availability and accuracy of information.
8. Automate Driver Services workflow wherever possible to improve customer service and operational efficiency.

## *Assumptions*

Through implementation of the IMDLIS Project, DVS will enhance the access and utility of driver information, thereby improving traffic safety and strengthening enforcement of problem driver sanctions. IMDLIS will support the Mission Statement and enable the Project Objectives stated above. The assumptions governing this project include:

1. Project will focus on Problem Driver Compliance, Traffic Safety, and customer service improvements through a consistent "paperless" e-Government approach.
2. Objectives of Issuance Fraud Reduction will be incorporated into the Problem Driver Compliance Improvement Project and can be an integral part of IMDLIS processes and user interfaces.
3. Current documentation and microfilm copies will be migrated to a digital format and DVS Web Services will be the vehicle for accessing all information.
4. Project will migrate from secondary data entry processes, to ensuring that data is entered at/by the source of the information.
5. System focus will be on workflow efficiencies and consistency of actions across all DVS staff.
6. Project development will utilize a component-based (object-oriented) architecture enabling a flexible foundation able to support transparent application growth and technology changes.
7. Project will utilize an iterative, requirements-driven development effort – enabling a staged deployment of highest priority requirements first.

8. Project will be implemented as a rules-based system, reducing dependence on individual or historical knowledge, or system logic.
9. Database Migration will be based on the architecture and staged across the deployment of each iteration, maintaining the existing database until all functionality has been migrated to the new system.

## Time Line

The timeline at this point is incomplete in that it is only covering Phase 2, the Functional Specifications and the Architecture for the development of the IMDLIS Project. Phase 1 (which is now complete and approved) was a feasibility study conducted by Gartner Consulting. The feasibility study assessed the current Driver License system environment and provided us with recommendations that will improve law enforcement access to information, provide up-to-date and accurate data, and offer law enforcement a level of service previously unavailable.

Phase 2, which is represented by this time line, covers the development of the Functional Specifications (Unit workflows, functional requirements, and project constraints), the development of the architecture, investigation of potential technology that will be needed to implement the architecture, the Design Specifications to document the architecture, and the Development Plan (identifying the number of Iterations and the content of each iteration). Phase 3 will initiate the Technical Specifications for Iteration 1 and begin the Development process for each of the defined Iterations.

| Driver License Information System Project 416 days | 8/5/02 | 3/8/04 |
|---|---|---|
| IMDLIS Phase 2-- Develop Functional Specifications | 8/5/02 | 5/29/03 |
| Define and Gain Approval for Scope Statement | 8/5/02 | 10/4/02 |
| Kickoff Meeting | 9/9/02 | 10/17/02 |
| Develop Work Unit workflows | 8/12/02 | 11/19/03 |
| Discover Functional Requirements for each Work Unit | 9/11/02 | 1/29/03 |
| Architecture | 1/14/03 | 4/16/03 |
| Prepare Architectural Map | 1/14/03 | 1/21/03 |
| Facilitate JAD session | 1/21/03 | 2/24/03 |
| Steering Committee Review | 2/25/03 | 2/28/03 |
| Initiate Design Specifications | 2/13/03 | 4/16/03 |
| Initiate Technology Investigation | 12/5/02 | 6/25/03 |
| Identify Technology areas | 3/3/03 | 3/14/03 |
| Describe Technology Needs | 3/17/03 | 3/28/03 |
| Assign committees for investigation | 12/5/02 | 6/25/03 |
| Phase 3 -- IMDLIS Development | 2/3/03 | 3/8/04 |
| Initiate System (Technical) Specifications | 2/27/03 | 5/21/03 |
| Initiate Programming for Iteration 1 | 2/3/03 | 3/8/04 |
| Define and Prototype User Interfaces/Security Access | 2/27/03 | 6/24/03 |
| Initiate Development for Iteration 1 Functions | 5/8/03 | 11/18/03 |
| Iteration 1 Post-mortem | 11/12/03 | 11/13/03 |
| Steering Committee/Stakeholders Review | 2/3/03 | 3/8/04 |

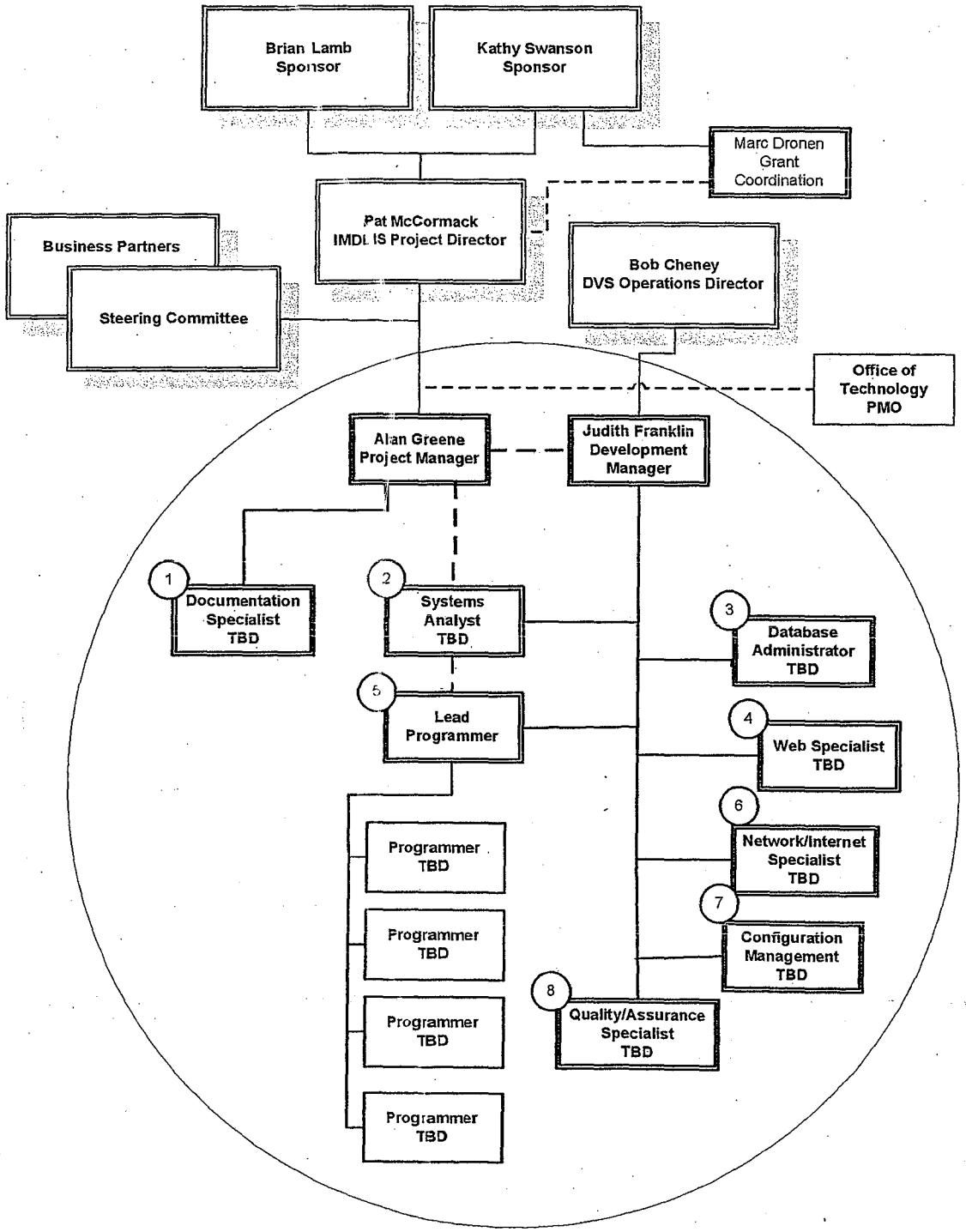
## Roles and Responsibilities

### Project Team

Brian Lamb, Director of Driver and Vehicle Services (DVS), and Kathy Swanson, Director of Traffic Safety, are the IMDLIS Project sponsors. Pat McCormack, DVS IMDLIS Project Director and Alan Greene, IMDLIS Project Manager provide management direction for the Team. Oversight of the Project is provided by a Steering Committee made up of involved stakeholders and the Office of Technology. In addition, a group of Business Partner Stakeholders will provide insight into the many needs for effective access to DVS information.

Judith Franklin and Bob Cheney will manage the technical portion of the Team. The initial Team will consist of a System Analyst, a Data Warehouse/Designer and a Documentation Specialist. Additional programming, network, and Q/A personnel will be needed after the Architecture for the system is completed.

**Project Organization**



## *System Constraints -- TBD*

**Define Technology Constraints**

- Architecture,
- Network and intranet,
- Database/Data warehouse,
- Configuration management

**Define Interface Constraints**

- Browser-based web screens for standard DVS users and access to DVS data stores.
- Interfaces with other Business Partners are unknown at this time but are assumed to be web-based interfaced.

**Define Data Store Constraints**

- DVS data store will be relational and active (i.e. reflecting the latest information entered into the system.

**Define Resource Constraints**

- Unknown

**Define Business Partner Constraints**

- CriMNet

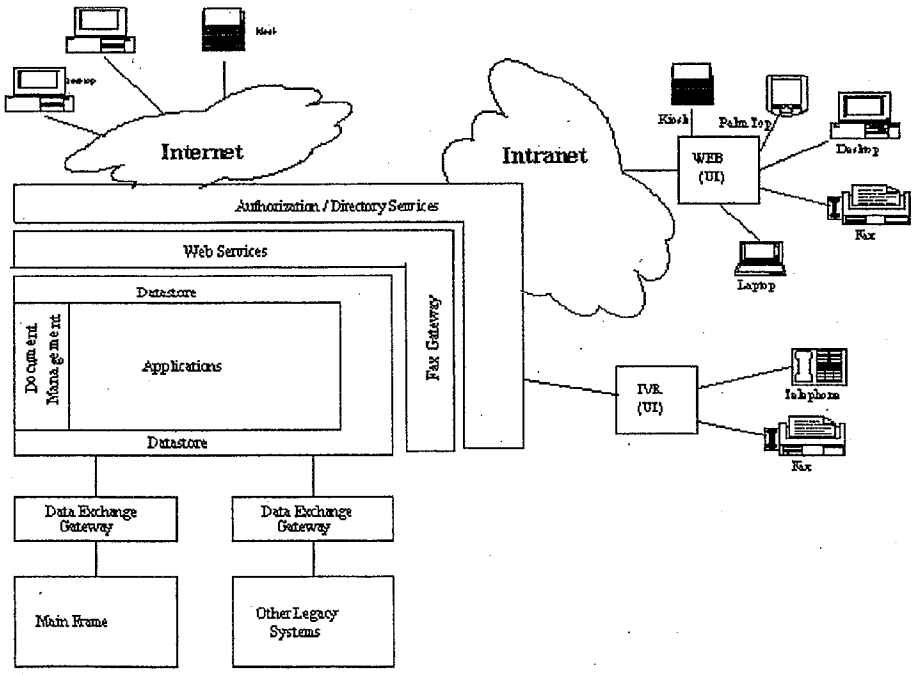
**Define Performance Constraints**

- Instant access to all records and documentation
- Able to sustain 800 active users on system at same time
- Able to sustain 5000 users on system at intermittent levels of usage

**Define Operational Constraints**

- 100 hours MTBF
- 24x7 Availability
- 15 minutes recovery after fault

## *High Level Architecture*



**Risk Identification**

Identify the risks for all Stakeholders by using a Risk Assessment Questionnaire Template (PMO Template), augmented to include other project specific risks, as identified.

**Categorize Risks**

Project is assumed to be at a Low-Medium Risk level, due to the number of unknowns, length of the project, and interfaces that will need to be specified with Business Partners. Risks will be mitigated by ensuring a solid foundation (Functional Specifications, Design Specifications, and Architecture) before development begins. Ensuring consistent communication throughout the project, and status/approval meetings with the Steering Committee after every deliverable/checkpoint. In general, risks are categorized as follows:

| | Characteristics | Risk | Risk Factor | Mitigation Considerations |
|---|---|---|---|---|
| 1 | Scope | Low | Well defined & understood | Distribute scope statements to all stakeholders for confirmation. Establish firm scope-change procedures up front. |
| 2 | Schedule | Lo w – Medium | Schedule will be established by scope and available resources | Ensure sufficient contingency is built into schedule. |
| 3 | Budget | Low | Funding is greater than estimated need and/or is expected to be stable. | Use iterative development methodology to ensure re-evaluation of scope against available budget on a timely schedule. |
| 4 | Effort | High | Project duration is estimated at 36 months or greater. | Establishing schedule contingencies is the preventative strategy. |
| 5 | Business or Organizational Impacts and Project Linkages | Medium | Linkages are not yet known. Project somewhat dependent on identification and a course of action can be defined to resolve potential dependencies. Without a clear understanding of potential linkage project deliverables, schedule delays possible. | Establish agreement with the linkage site to fulfill this project's needs and document the agreement<br>Close monitoring and coordination of both projects needs to be performed to minimize impact of the conflict. |
| 6 | Human Resources | Medium - High | The Project Manager's experience and training is in managing projects similar to this one, and the project team will be located together. | Ensure that a clear line of authority is enabled. |

| | Characteristics | Risk | Risk Factor | Mitigation Considerations |
|---|---|---|---|---|
| 7 | • *Leadership Support* | Low | The Project Sponsor is identified, committed, and enthusiastic. The Steering Committee is identified and supportive. | Ensure strong lines of communication are established with Sponsor and Steering Committee. Establish Web-based status reporting and communication facilities. |
| 8 | Technology and Vendors | Medium | The architectural requirements are yet to be defined. | It is assumed that choices will be based on mature technology and similar to other State technology and State-authorized vendors. |
| 9 | Business Process Reengineering | Medium | Can be disruptive to personnel and processes. | Plan to utilize an evolutionary approach and involve stakeholders and users in all decisions. |
| 10 | Data Linkages | Medium-High | DL Data is not a stand-alone system (physically and logically). Linkages are required with MV data as well as other State/Partner databases. | Will evaluate and implement an integration strategy with other database content. May need to identify additional resources to coordinate conversions. |

***Risk Response Tracking:***

As part of status reporting and as part of DVS IMDLIS Project Web Page:

- Document the dates and the actions taken to mitigate the risk
- Document the actions taken when the risk event occurred (contingency plan)
- Document any subsequent actions taken
- Incorporate this information into the Risk Response Plan

## *Communications Plan*

The strategy for the IMDLIS Project is to post all project communications on a read-only web site. Certain stakeholders will be identified as having update and edit authority. This web site will contain pages for Scope Statement (Mission, Business Objectives, Assumptions, Timeline, Organization, Architecture, and Project Timeline),Work Unit Workflows, Functional Requirements, Calendar of Milestones and Checkpoint/Steering Committee Meetings, Risk and Issue Logs, Change Management Requests and Disposition, and Project Status Reports. These pages will be updated at least weekly. As major concerns arise to schedule or implementation, the Project Manager will issue an alert to the Sponsors and to the Steering Committee.

In addition to the communications web-site, specific reports will include:

- Sponsors and Stakeholders Status reports: Monthly
- Project Management Status meetings: Bi-weekly
- Project Team Status meetings: Weekly
- Configuration Management Status meetings: Monthly
- Grant Communication meetings; Monthly

# Impacted Organizations

Determine what associated Organizations and Business Partners require from DVS; what is not working now; what information is difficult to obtain to meet their business objectives or needs.

## *Public Users*

Citizens require public access to their individual driver records to insure accuracy and to determine their current status and/or the conditions that need to be satisfied to retain/re-issue a license. Such access will be provided by:

- Walk-In: Exam station, Driver License Agent, Public Counter
- Phone
- Internet (Web) access
- Kiosks ???

## *Internal Business Process Users*

DVS supports the Department's mission to protect the people and property in Minnesota by administering state safety laws and regulations that improve driver safety by reducing crashes and removing unsafe drivers from state roadways. This is accomplished through the following DVS business functions:

- Driver's License Examinations
- Driver's License Issuing
- Driver Training
- DL Agent Support
- Impounds/Special Plates
- Driver Compliance
- Withdrawal of Driving Privileges
- Appeals
- Driver Evaluation
- Reinstatement
- Information Provision
- Driver Records Management
- Crash Records

## *External Business Partner Users*

A wide variety of stakeholders, both inside and outside government, provides for and relies upon DL information. DVS must keep current, accurate driver records and ensure outside agencies have appropriate access to these records, while also protecting the privacy rights of drivers. In coordination with various law enforcement agencies and court systems, DVS helps to ensure drivers follow the state safety laws. DVS external business partners include:

- DL Agents and Deputy Registrars
- Criminal Justice Agencies
- Law Enforcement (Police, Troopers, Sheriffs)
- Minnesota Court Systems
- Attorneys
- Federal Agencies and Organizations
  - Federal Bureau of Investigation
  - Federal Motor Carrier Safety Administration
- State Agencies and Organizations
  - Department of Human Services
  - Department of Revenue

- Department of Transportation
- Department of Natural Resources
- Secretary of State
- Office of Traffic Safety
- Bureau of Criminal Apprehension
- Department of Health – Office of Vital Statistics
- Office of Technology

- American Association of Motor Vehicle Administrators
- National Law Enforcement Telecommunications Network
- Commercial Organizations
  - Retailers
  - Financial Institutions
  - Insurance Companies
  - Employers
- DWI Task Force

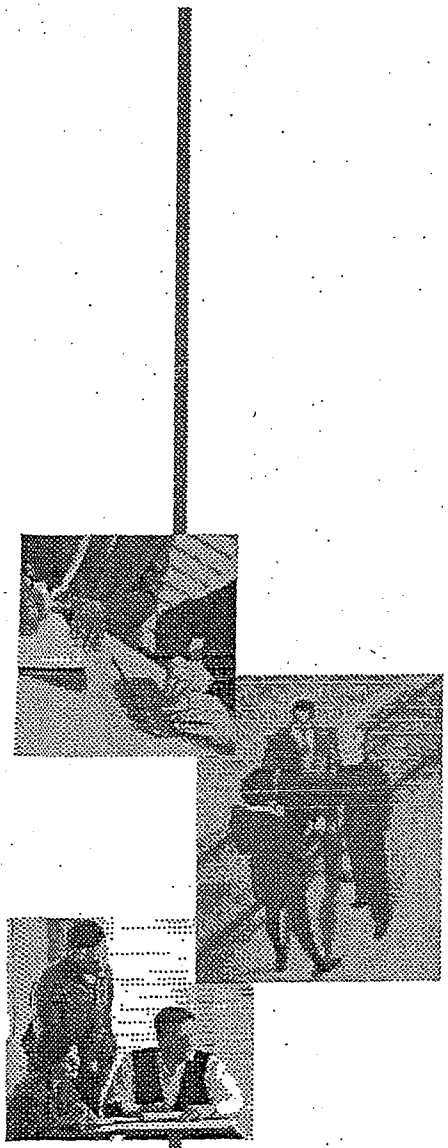
# Definitions

Over 80% of all projects fail (Standish Group study, 1994). There are many reasons for this including lack of user input (13%), incomplete requirements (12%) and changing requirements (12%). Most of these problems can be solved before they even are a problem by clearly defining the boundaries (scope) of the investigation up front. This will help define the problem to be solved.

Scope definition – it is the foundation for project activities and therefore it is crucial that it be done right. There are many reasons why a project will fail, but chief among the reasons is having ill-defined, ambiguous, or missing requirements. Leads to the Ready, Fire, and Aim syndrome.

- Business Requirements/Objectives – what is to be accomplished by implementing the project, a definition of the expected outcomes (usually based on financial or operational considerations). Assists in defining scope of project, problem domain.
- Constraints -- business constraints on project such as the risks, costs, resources, timeline, technology etc.
- Business Process – documentation of business process workflow and associated functions (business events) that will need to be examined to determine if there is a better way to conduct the workflow and the functions.
- Business Event – businesses respond to "triggers". Business events are unique business functions or the actions taken whenever such a trigger event occurs.
- Functional Requirements – what the eventual system will do. Defines the features, capabilities, properties, or functions of each business event that a system MUST have to satisfy business objectives, and the business constraints on the resultant system (e.g. time frames, costs, resources, risks, technology).
- Why is scope management important? It is the process for testing validity of project requirements.
  - Does requirement support business objectives and meet constraints (is it within project scope)
  - Basis for continual evaluation of "gold plating" and "scope creep"
  - Change management – review committee approves any change to scope

Gartner



Final Report Prepared for

# Minnesota Department of Public Safety

# Improved Driver License Information System Project Feasibility Study Report

December 2001

Engagement: 220027320

Gartner Consulting

2870 Gateway Oaks Drive, Suite 150, Sacramento, CA 95833
(916) 649-7100

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# Executive Summary

This report presents recommendations to the Minnesota Department of Public Safety's Driver and Vehicle Services (DVS) Division for redesign of its Driver License database and related applications and processes. By implementing these recommendations, DVS will enhance the access and utility of driver information, thereby improving traffic safety and strengthening enforcement of problem driver sanctions. Specific project objectives include:

- Improved law enforcement access to information 24 hours a day, 7 days a week both locally and over the Internet
- Improved reporting and records system relied upon by law enforcement by automating the case management of the driving privileges of problem drivers
- Interaction with relational databases used by law enforcement agencies and the court system
- Improved customer service by facilitating on-line duplicate license applications and record requests, credit card payments, receiving electronic information regarding no-fault insurance and daily purging of records no longer valid
- Facilitated statistical reporting of driver-related information

## Project Background

With the support of US Transportation funds received from the Section 164 of TEA-21 Penalty Transfer (Repeat DWI Offender Sanctions), the Department initiated the Improved Driver License Information System Project. This report completes phase one of the project, providing an assessment of the current Driver License system environment and recommendations that will improve law enforcement access to information, provide up-to-date and accurate data, and offer law enforcement a level of service previously unavailable.

## Current Environment

### Internal Business Process

DVS supports the Department's mission to protect the people and property in Minnesota by administering state safety laws and regulations that improve driver safety by reducing crashes and removing unsafe drivers from state roadways. This is accomplished through the following DVS business functions:

- Driver's License Examinations
- Driver's License Issuance
- Driver Training
- DL Agent Support
- Impounds/Special Plates
- Driver Compliance
  - Withdrawal of Driving Privileges
  - Appeals
  - Driver Review
  - Reinstatement
  - Information Provision
  - Driver Records Management

## External Business Partners

A wide variety of stakeholders, both inside and outside government, provides for and relies upon DL information. DVS must keep current, accurate driving records and ensure outside agencies have appropriate access to these records, while also protecting the privacy rights of drivers. In coordination with various law enforcement agencies and court systems, DVS helps to ensure drivers follow the state safety laws. DVS external business partners include:

- DL Agents and Deputy Registrars
- Criminal Justice
  - Law Enforcement
  - Courts
  - Attorneys
- Federal Agencies and Organizations
  - American Association of Motor Vehicle Administrators
  - Federal Bureau of Investigation
  - National Law Enforcement Telecommunications Network
- Commercial Organizations
  - Retailers
  - Financial Institutions
  - Insurance Companies
  - Employers
- State Agencies and Organizations
  - Department of Human Services
  - Department of Revenue
  - Department of Transportation
  - Department of Natural Resources
  - Secretary of State
  - Department of Public Safety
  - DWI Task Force

## Business Environment Issues

The Driver Services Program currently faces a number of challenges related to its business environment, both internally within DVS and in its interaction with external business partners. The assessment identified the following problems and related opportunities for improvement:

- Information in the DL database is not always accessible
- Information in the DL database is not current
- DL data provides limited support for law enforcement purposes
- Heavy reliance on manual processes reduces Driver Services Program effectiveness
- Information generated by external partners is not always transferred effectively to the DL database
- The DL system presentation is not user friendly
- DVS cannot track customer activities in real-time
- DVS cannot effectively track fraud within the system

## Technical Environment Issues

A technology environment has been developed over the years to support changing DVS business processes and external partner information sharing requirements. The current environment includes a set of technology components, with the central application and database system located at Intertech. While most users require information during regular business hours, law enforcement users must access DL data on a 24-hour, 7-day-per-week basis.

A disparate collection of technologies and protocols support on-line transactions, batch processing, connectivity, data storage, and external interfaces. Many of the technologies used are old and inflexible, limiting the program's ability to maintain and provide the most current, useful information to its employees and external partners. As part of the assessment, the following technical issues were documented and must be considered when the future vision is defined:

- The current database platform, Supra, limits program support
- The current database platform, Supra, is not a long-term viable platform
- Internal and external users must continue to reliably access DL information
- Accuracy and completeness of data is a technical as well as a process issue
- E-Government efficiencies and expectations are driving change
- Reengineering of DL data schemas is not a simple "porting" activity

## Future Vision

Given the current environment issues that need to be addressed, the feasibility study developed the future vision, goals, and objectives of the Improved Driver License Information System Project. These were used to guide recommendations that enhance public safety by modernizing and improving the Driver Services Program. Many of its business processes and technologies can be improved, enabling DVS employees, external business partners, and customers to conduct business electronically and to access real-time accurate information. The following table presents project goals and objectives that were developed during the assessment and the relationship of each objective to the issues it helps address.

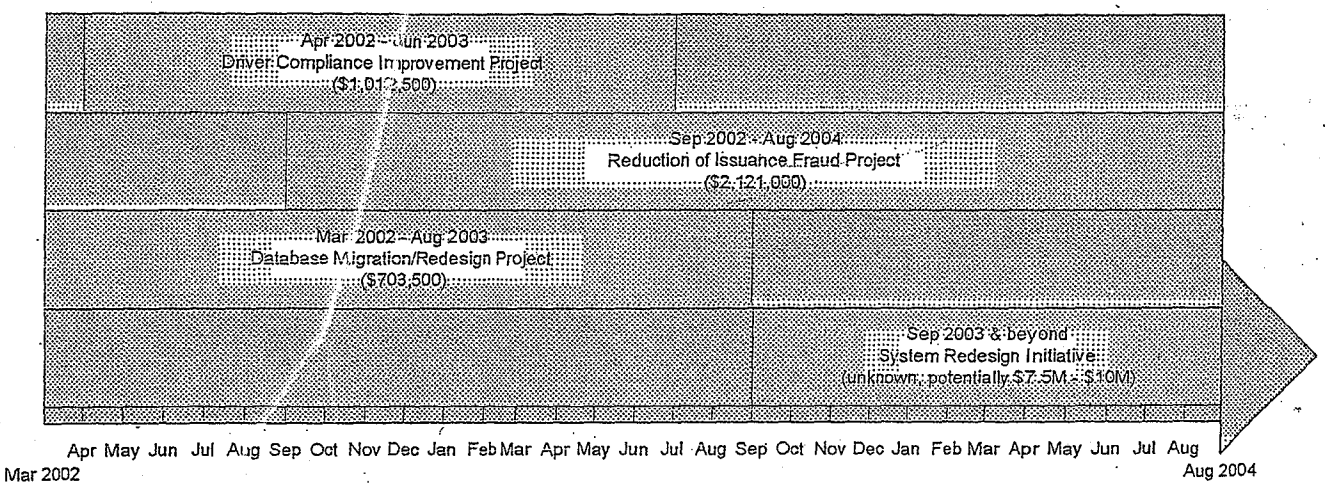
| Objective | Information is not current | Does not effectively prevent fraud | Heavy reliance on manual processes | Cannot track customer activities in real-time | Provides limited support for law enforcement | Information is not always accessible or reliable | External data not always easy to access or effective | System not user friendly |
|---|---|---|---|---|---|---|---|---|
| **Goal 1: Streamline and automate data collection activities** | | | | | | | | |
| Allow access to all DL and related data from any Exam Station, Central Office unit and by staff working in the field | * | * | | * | | | | * |
| Reduce administrative workload by automating various manual tasks | * | | * | | | | * | * |
| Reduce time to issue a driver license to two business days | * | * | * | | | | | |
| Update driver records within 1 business day of receipt of original or renewal application or record change request | * | * | * | | | | | |
| Provide all Exam Stations with the ability to retrieve and view driver records online | * | * | | | | | | * |
| Develop the ability to capture original and renewal application data at the source | * | * | * | * | * | | * | * |
| Provide each Exam Station with standard, enterprise-wide information technology tools | * | * | * | * | | | | * |
| Provide automated data verification to ensure that DVS maintains data that is accurate and reliable | * | * | * | | * | | | * |
| **Goal 2: Enhance ability of stakeholders to use DL data to make more effective decisions** | | | | | | | | |
| Provide business partners with the most up-to-date, accurate driver data possible | * | | | | * | * | * | |
| Allow for seamless integration with other DVS and external information systems | * | | * | | * | | * | |
| Improve the ability of DVS management to plan and budget for the DL Program by providing better data | | | | | | | | * |
| **Goal 3: Build systems that support DVS external business partners** | | | | | | | | |
| Increase the integrity of the Minnesota DL and ID card as a positive form of identification for citizens | | * | | * | | | | |
| Provide information to external partners on a 24-hour, 7-day-per-week basis | | | | | * | * | | |
| Develop more user-friendly interfaces | | | * | | | | | * |

## Recommendations

As a result of the Feasibility Study assessment, four projects have been recommended as the best manner in which to deploy the available DVS financial and human resources for the Improved Driver License System Project. These projects were identified to address the current issues and opportunities that DVS faces, and each supports many of the stated goals and objectives. The recommended projects include:

- Driver Compliance Improvement Project
- Database Migration/Redesign Project
- Reduction of Issuance Fraud Project
- System Redesign Initiative

The recommended projects are consistent with the current DVS vision and build upon various planning and implementation activities currently underway within DVS to improve its business functional areas. While the projects exhibit a wide range of timeframes and costs, there are interdependencies as well as internal DVS resource limitations that will influence their implementation. A high-level overview of project costs, timeframes, and dependencies are provided in the figure below:




The recommendations have been designed to allow DVS to conduct multiple projects while continuing to support the daily business and technical needs of the organization. They include:

- Utilization of contractor support for many technical functions
- Acquisition of an experienced project manager to coordinate and lead project activities
- The Driver Compliance Improvement Project, which provides immediate, direct benefit to dealing with problem drivers, is placed early within the implementation roadmap
- Initial migration of the database technology provides early system benefits while avoiding the significant risk that a full database and system redesign would bring

Detailed information about the scope, technology, implementation approach, deliverables, resource requirements, timeframes, costs, and key risks for each recommended project is provided in the project descriptions in this report. The table on the following page provides a high-level summary of the four recommended projects.

## Summary of Recommended Projects

| Project Name | Driver Compliance Improvement Project | Reduction of Issuance Fraud Project | Database Migration/ Redesign Project | System Redesign Initiative |
|---|---|---|---|---|
| Description | Provides needed improvements to the Driver Compliance process to better allow the criminal justice community to identify, track, and manage problem drivers | Provides needed improvements to the Issuance process to better limit the opportunity for applicants to obtain fraudulent driver licenses | Encompasses the migration and limited redesign of the existing core DL database to a high performance, flexible, relational database environment | Incorporates full redesign of the DL system, including redesign of the database and modification or replacement of applications and interfaces that access DL data |
| Major Benefits | • Provides more current and accurate information to law enforcement and others<br>• Allows for more immediate update of information in DVS databases<br>• Reduces the flow of paper between DVS and its partners<br>• Improves likelihood of complete and correct transactions by supporting self-service applications | • Improved tools with which to limit the ability to obtain fraudulent licenses<br>• Increased ability to track customer activities and information in real-time<br>• Improved customer service<br>• Improved accuracy of data in DL database<br>• Improved process efficiency and effectiveness | • Leverage of power of relational database and modern software development technologies<br>• Improved ability to hire and retain database support staff<br>• Improved database vendor support and independent software vendor tools and products<br>• Leverage of current hardware investments | • Significantly improved ability for DVS to share and act upon data from program perspective<br>• Full leverage of power of relational database and modern software development technologies<br>• Takes advantage of a fully redesigned system to better respond to legislative mandates, user needs, and management requests |
| Major Project Activities | Analysis of current business process, analysis of current technical environment, system requirements and design, system development and implementation | Analysis of current environment, develop conceptual vision, system requirements and design, system development, pilot, full implementation | Analysis of existing database and programs, program conversion, data conversion, conversion testing, implementation | Analysis of existing database and programs, program conversion, data conversion, conversion testing, implementation |
| Recommended Technology Features | Direct connectivity to external business partners, web server environment, web-to-host software tools | Modern database platform separate from core DL data, latest generation development tools, workflow software | DB2 database platform, robust hardware and system software platform, continued leverage of Cobol programs | Robust hardware and system software platform, network-centric model, flexible development tools |
| Estimated Timeframe | 15 months | 24 months | 18 months | 3-4 years |
| Estimated Cost | $1,012,500 | $2,121,000 | $703,500 | $7.5M - $10M |

# Introduction

This section of the report includes background information related to the Improved Minnesota Driver License Information System Project and its first phase, this Feasibility Study Report. It also summarizes the activities and participating stakeholders that were instrumental in the analysis and development of the report.

## Project Background

The Improved Minnesota Driver License Information System Project is a multi-phased effort undertaken by the Minnesota Department of Public Safety (DPS) with funding from the United States Department of Transportation. The overarching goal of the project is to redesign and improve the processes and technology that support the Driver Services (DS) Program, a unit of the Department's Driver and Vehicle Services (DVS) Division. The project will result in improved traffic safety by enhancing access to and utility of driver information. Expected benefits include:

- Allow for improved law enforcement access to information 24 hours a day, 7 days a week both locally and over the Internet
- Improve the reporting and records system relied upon by law enforcement by automating the case management of the driving privileges of problem drivers
- Update and access records faster resulting in more up-to-date information being available to Law Enforcement
- Streamline the workflow process, resulting in greater overall efficiency for DVS
- Reallocating resources to provide a higher level of customer service
- Eliminate the labor and paper intensive process and the errors inherent in the current licensing system
- Allow for interaction with relational databases used by law enforcement agencies and the court system
- Allow for improved customer service by facilitating on-line duplicate license applications and record requests, credit card payments, receiving electronic information regarding no-fault insurance and daily purging of records no longer valid
- Facilitate statistical reporting of driver-related information

The first phase of the project, Feasibility Study and Risk Assessment, is the subject of this report. It presents a high-level analysis of the business and technology environment of the DS Program, and develops an assessment of recommended project goals, objectives, and initiatives. For each initiative, further detail is documented regarding the initiative benefits, recommended approaches and technology features, and estimated timeframes and costs. Finally, an implementation roadmap and risk analysis is provided to assist the Department in future planning and management tasks.

Future phases of the project include the procurement of services and technology to support the recommended improvements, and the planning, design, development, and deployment of improved Driver License system solutions.

## Feasibility Study Report Structure

This Feasibility Study Report follows a proven structure that builds a case for change and improvement in the DS Program and its supporting IT infrastructure. It includes the following sections:

*Baseline Environment* – The baseline environment is documented, detailing the current internal and external business functions and current technical environment that supports the DS Program.

*Business Case* – The business case for change is defined, providing information about program background and business problems and opportunities.

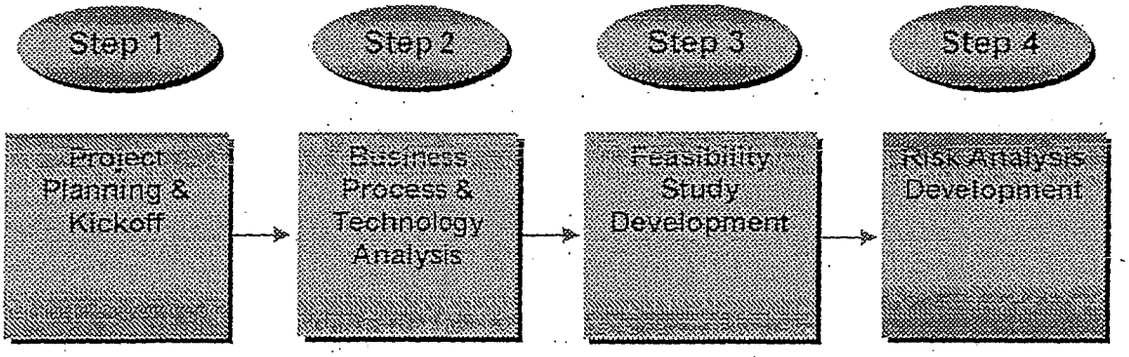
*Operational Vision and Opportunities* – To understand how DVS can proceed given the business problems and current environment, the operational vision and related solution opportunities are discussed.

*Recommended Projects* – Recommended projects are presented to allow DVS to address its current issues and meet its future vision, and the implementation of recommended projects are incorporated into an integrated roadmap to guide future activities.

*Risk Analysis* – A risk analysis of both proceeding and not proceeding with the recommended initiatives is performed to communicate the risks inherent in undertaking the recommended future activities.

## Feasibility Study Methodology

DPS contracted with Gartner Consulting to support Phase 1 of the project, with assistance from a wide variety of internal and external DVS stakeholders. This Feasibility Study followed a four-step process, as detailed in the diagram below. This report is the culmination of these activities.




### Project Stakeholder and Data Collection Activities

Tasks were performed early in the project to support baseline understanding and communication for all project stakeholders. These initial tasks included:

- Conducted Preliminary Data Gathering

  - Held meetings and conducted interviews in May 2001
  - Received initial documentation
- Conducted Project Kickoff Presentations
  - Held project initiation meeting with Internal Business Process Committee
  - Held project initiation meeting with Technical Advisory Committee
  - Held project initiation meeting with external business partners (16 participants)

A detailed review of business practices related to Driver License processes was performed, within both DVS and its external business partners. Activities related to this review included:

- DVS
  - Conducted 10 interviews with DVS staff
  - Identified DVS processes through 2 focus groups with 15 DVS staff
  - Identified DVS process issues with 1 focus group of 18 DVS staff
  - Observed processes at St. Paul Public Counter, Driver Evaluation, South Metro Exam Office, and Issuing Unit
  - Collected and reviewed existing documentation
- External Business Partners
  - Gathered input from external stakeholders in 2 focus groups with 25 participants from 19 organizations
  - Observed processes at Ramsey County Court, St. Paul Police Department, and Department of Human Services (Child Support)

Concurrent with a review of the business environment, the technical environment supporting DVS and its external business partners was also reviewed. Activities related to technical environment review included:

- DPS/DVS
  - Conducted interview with DPS CIO
  - Conducted individual and group interviews with DVS IT management, DPS/OTSS IT management and staff, and other DPS technical staff
  - Participated in demonstration of current DVS IT development activities
  - Collected and reviewed documentation related to current and planned initiatives
- Department of Administration
  - Conducted interviews with 10 Intertech staff
  - Conducted interview with State Architect (Office of Technology)
  - Collected and reviewed documentation related to current and planned Intertech initiatives

# Baseline Environment

This section of the Feasibility Study Report describes the current Driver Services Program environment. It includes background information about the business program, a detailed description of current DS business functions and opportunities for improvement, a discussion of external business partners and their DL information needs, and a depiction of the current technical environment supporting the program and its internal and external stakeholders.

## Business Program Background

The Driver and Vehicle Services Division (DVS) of the Minnesota Department of Public Safety (DPS) issues 4.5 million license plates, 1.7 million motor vehicle titles, and 1.3 million driver's licenses and State Identification Cards (ID) each year, collecting nearly a billion dollars in State revenue in the process. With more than 500 employees located throughout the State, DVS' annual operating budget is approximately $39 million, of which $24.1 million supports the Driver Services (DS) Program. DVS gives driver's license examinations, licenses commercial driver training schools, maintains records on motor vehicle accidents, licenses and inspects auto dealers, and inspects salvage vehicles. It also reviews the driving privileges of drivers with alcohol offenses, medical disabilities, or problems affecting their driving.

### Business Process Description

The mission of the Department of Public Safety is to protect the people and property in Minnesota through prevention, regulation, enforcement, information, and service. As a division of DPS, DVS' role in accomplishing this mission is to administer state safety laws and regulations that improve driver safety by reducing crashes and removing unsafe drivers from state roadways. DVS accomplishes this through the following processes.

*Driver's License (DL) Exams* – This process involves administering three types of exams: knowledge (administered via hard copy, electronically, or orally), vision, and road/skill tests, including commercial driver's license (CDL) tests. The CDL process involves additional processing including criminal background checks using a national database. DVS offers these exams at 94 exam stations disbursed throughout the state.

*DL Issuance* – In order to obtain or renew a driver's license, an applicant must fill out an application, provide proof of identity, and in the case of a driver's license applicant who is under 18 years of age, provide proof of appropriate training. Applicants receive a temporary driving permit at exam stations. An applicant must also have his/her picture taken at either a full service exam station or a DVS business partner location. Once these steps have been completed, the DVS Issuing Unit uses the DL application and the picture (under a contract with Polaroid) to produce a hard plastic license. Issuance includes the following additional relevant processes:

- Cashiering (application fees)
- Creating and updating individual records
- Issuing and distributing ID and license card (includes sending relevant information to vendor for card production)
- Providing proof of residence to Department of Natural Resources

*Driver Compliance* – DVS administers state law by revoking, suspending, canceling and denying licenses for a variety of violations and/or medical reasons. DVS provides one-on-one service to each individual whose license has been suspended, revoked, cancelled, or denied. Driver Compliance includes the following processes:

- *Withdrawal of driving privileges* – DVS withdraws driving privileges for a variety of violations, including not consenting to a chemical test for the presence of alcohol or other substances (i.e. Implied Consent); Driving While Intoxicated; habitually not following driving laws (e.g. speeding); and driving with an invalid driver license. Driving privileges can be withdrawn in several ways: suspension, revocation, cancellation, and disqualification.

- *Appeals* – In some cases, drivers can appeal DVS' decision to withdraw their driving privilege.

- *Driver review* – DVS driver evaluators meet with citizens to review their driving records and develop courses of action to reinstate the driving privilege.

- *Reinstatement* – Following a withdrawal of the driving privilege, DVS reinstates driver licenses if the driver has met all remediation requirements.

- *Information provision* – As an agency that contains a large repository of data on Minnesota citizens, DVS provides data to the criminal justice community, retailers, and other similar entities for purposes such as identification verification and background checks.

- *Driver records management* – A critical element of managing citizens' driving privileges, records management ensures that information related to violations, convictions, accident records, and driving certifications is kept on the driver record. In addition, DVS retains physical and electronic documentation on transactions related to the driver record for potential use in court.

*Driver Training* – DVS licenses all driver training schools and instructors in the State. This process involves setting minimum basic criteria that schools must meet and monitoring the schools and instructors to ensure requirements are met.

*DL Agent Support* – DVS is responsible for appointing, training, monitoring, and providing supplies to agents who accept driver's license and renewal applications. DL Agents are individuals who contract with DVS to provide driver license services.

*Impounds/Special Plates* – DVS is responsible for restricting the driving privileges of repeat offenders via administrative impoundment and issuance of special series license plates. This process relies on both the DL and vehicle registration databases and involves administrative reviews, issuance of special series plates, and reinstatements.

## DVS Organizational Structure

The Driver and Vehicle Services Division operates under the Minnesota Department of Public Safety whose Commissioner reports directly to the Governor. DVS is organized into the following four units:

- Driver Services
- Vehicle Services
- Administration
- Support Services

The Improved Driver License Information System Project most directly affects the Driver Services unit. This unit is divided into the following three groups:

- Driver Exam/Issuing
- Driver Compliance
- Driver Services Coordination

Figures 1 and 2 contain organization charts for both DVS and the Driver Services subdivision.

**Driver and Vehicle Services Division**
**Organizational Chart**

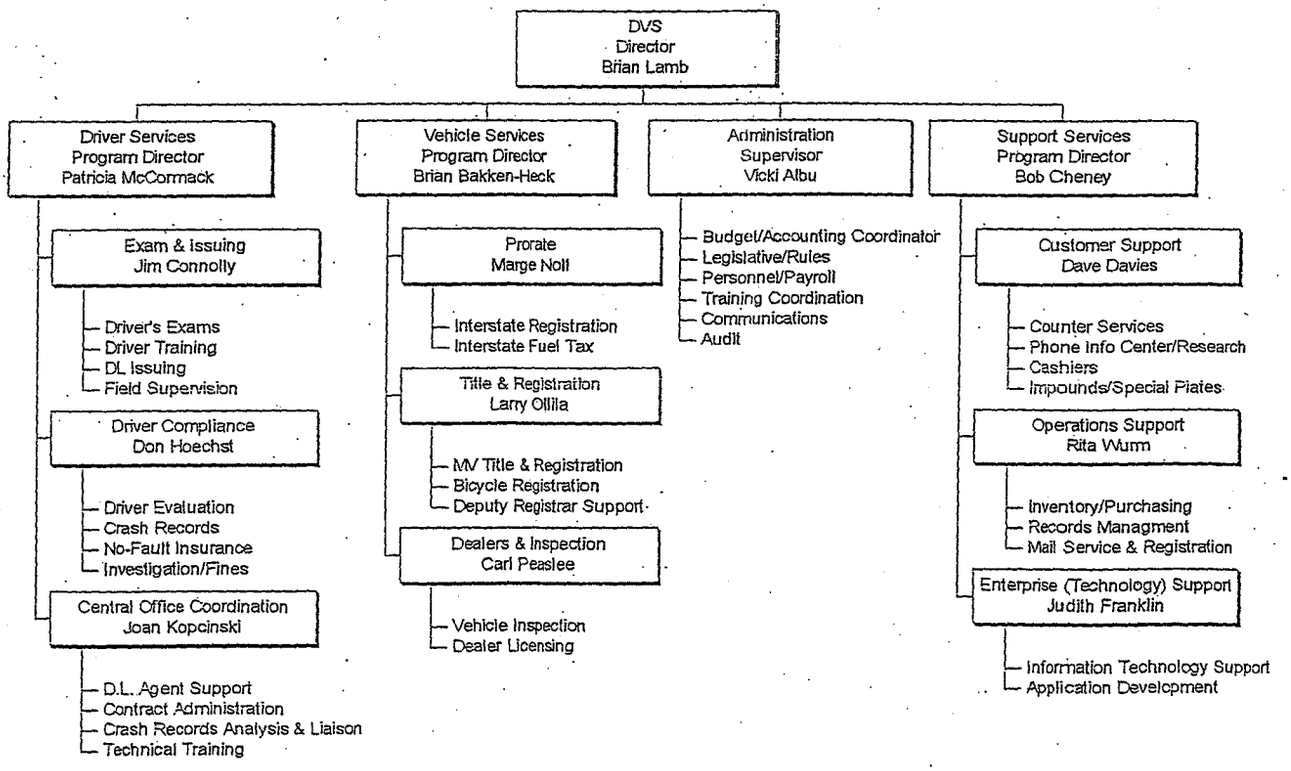



Figure 1. Driver and Vehicle Services Organizational Chart

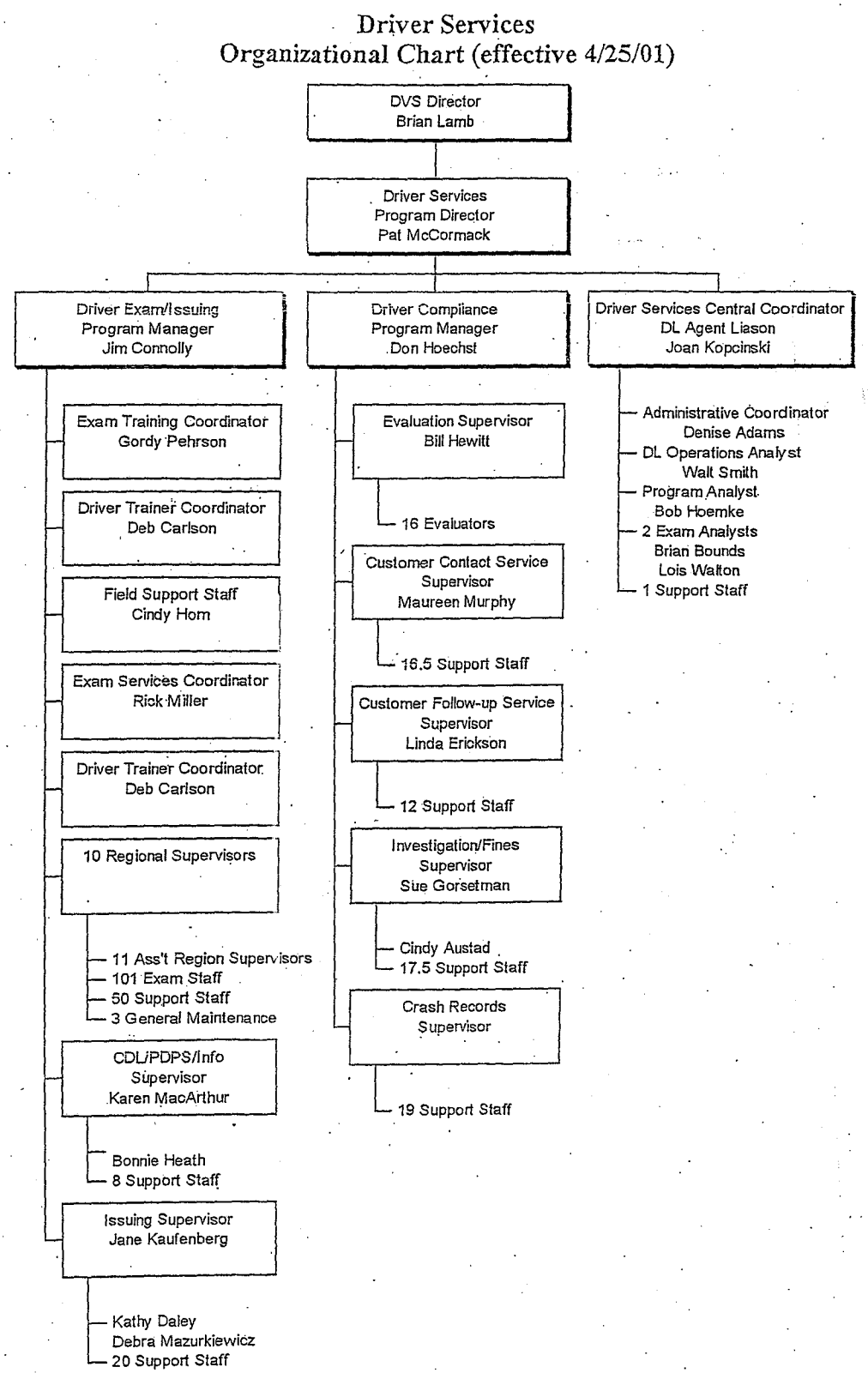



Figure 2. Driver Services Organization Chart

## DS Program Data

DVS keeps records about Minnesota drivers, including driver license and driver history information. This includes names, addresses, physical description (height, weight, eye color), date of birth, gender type, status of driver license, whether corrective lenses are needed for driving, and whether the person is an organ donor. In addition, a record is kept of any moving violations, medical information about certain conditions that may affect driving, social security number (as required for certain driver license classifications), suspensions, revocations, and cancellations of driver license privileges.

## Customers and Users

In addition to DL Agents and users internal to DVS, law enforcement and court agencies have access to DL information through mechanisms such as the criminal justice data network. Other government agencies also have access to the records to obtain or verify information needed to carry out their programs. External users of the DL database include:

- Driver License Agents
- Local Police Departments
- County Sheriffs
- Minnesota State Highway Patrol
- American Association of Motor Vehicle Administrators (AAMVA)
- Federal Highway Administration
- Federal Motor Carrier Safety Administration
- Federal Bureau of Investigation
- National Highway Traffic Safety Administration
- Minnesota State Court System
- Attorney General's office
- City Attorneys
- County Auditors
- Department of Natural Resources
- Department of Commerce
- Department of Human Services (Child Support Division)
- Office of Traffic Safety
- Emergency Medical Services
- Financial Associations
- Retailers

All DL information that DVS collects is made available to external users in full compliance with data privacy laws.

## Current Internal Business Process

This section describes the current business processes involved with the issuance and renewal of driver permits and licenses, driver license records management, and driving privileges review.

### Process Analysis

In order to determine what information is sought and by whom (i.e., what invokes action) and the corresponding action taken, and by whom, focus groups were conducted with multiple members of all three of the Driver Services unit groups, including:

- Driver Exam/Issuing
- Driver Compliance
- Driver Services Coordination

In these focus group activities, the workflow of the following areas was analyzed:

**Exam and Issuing**
- Vision Exam
- Knowledge Exam
- Issuance
- Renewals

**Driver Compliance**
- Implied Consent
- Driving While Intoxicated
- Withdrawals
- Limited License
- Habitual Problem Drivers
- Driving with Invalid License
- Reinstatement

*Vision Exam* – A customer desiring either a driver's permit or license presents identification to a DVS Clerk or Examiner. Once the DVS Clerk or Examiner approves the customer's identification, a Vision Exam is administered and the results recorded. The customer then continues to the Knowledge Exam process.

*Knowledge Exam* – The DVS Clerk or Examiner selects and administers the Knowledge Exam based on the type of license or endorsement that the customer seeks. Once the customer passes the Knowledge Exam, the customer continues on to the Issuance Process. If the exam was taken at a partial service station, the DVS Clerk or Examiner completes a Record of Examination (RX).

*Issuing* – The customer provides a completed application and the appropriate fees to a DL Agent. The customer then proceeds to the Road Test (not covered in this analysis). The application and RX (produced in the Knowledge Exam process) are sorted in the DPS Mail Room, verified by DL Audit, and entered into the Minnesota Accounting Procurement System (MAPS). The application information is then microfilmed for storage, entered into the DL/MV mainframe system by the Issuing group, and integrated with the customer's Polaroid photo.

*Renewals* – Renewal Reminders (postcards indicating the class or type of card and the renewal fee - check) and Required Information Letters (based on the type of endorsement for commercial drivers) are generated in response to a monthly request from the CDL/Research

group. Programs are also in place to generate post card reminders, ID renewals, school bus letters, and hazardous material letters. The postcards and letters are sorted and mailed, prompting the customers to go to an exam station or DL agent to renew their licenses. The Required Information Letters include additional attachments and inserts (including a billing slip) that are handled by the CDL Research group.

*Implied Consent* – Implied Consent refers to a driver's acceptance to take a test for possibly driving under the influence whenever pulled over by a law enforcement officer. The implied consent can only be invoked once the driver has been placed under arrest. A driver agrees to the Implied Consent requirement when he/she accepts the terms of a Minnesota Driver's License. A law enforcement officer may pull a driver over for violation of Minnesota traffic laws. The law enforcement officer can invoke the implied consent law and administer the test if the officer believes that one of several conditions exist:

- The driver has been arrested for a DWI violation;
- There is reasonable suspicion of alcohol or drug involvement; or
- The screening test indicated impairment.

If a driver refuses to take an alcohol/drug test after being arrested, the law enforcement officer may proceed with charging the driver for violation of Implied Consent statutes. The Implied Consent area was studied as a representative example of how DVS processes information from outside sources. Once DVS receives information from an outside agency (e.g., a driver's intoxilizer results are sent in by law enforcement officers), the information is verified and entered into the DL/MV mainframe system. In most cases, DVS receives this information from law enforcement agencies in hard copy format. The DL/MV mainframe system determines the appropriate action based on the driver's current and historical information (e.g., the driver's license may be revoked for a longer time period if the driver is a repeat offender). DVS then sends the appropriate material to the driver (e.g., a withdrawal order if the license is revoked) and updates the driver's record (e.g., notifies the Impound Unit of the driver's record).

In 2000, DVS revoked 30,673 for implied consent statute violations.

*Driving While Intoxicated* – Minnesota statutes declare it is a crime if a driver operates a motor vehicle when his/her blood alcohol concentration (BAC) is 0.10 percent or greater, or refuses the test, when the BAC is 0.04 percent when operating a commercial vehicle; or when the person is under the influence of alcohol, a controlled substance, or a substance listed on schedule I or II of the Schedules of Controlled Substances MS 152.02. When a Minnesota court convicts a driver of DWI, DVS receives notification and issues a withdrawal order. In 2000, DVS revoked 27,478 licenses (including some out-of-state) for DWI violations.

*Limited License* – In certain circumstances, DVS issues limited driver licenses to drivers with revoked or suspended licenses. Reasons to obtain a limited license include driving to and from an employer, a post-secondary educational institution, or an alcohol intervention program. In some cases, homemakers may obtain a limited license for educational, medical, and nutritional purposes. DVS will not issue a limited license to drivers with cancelled or disqualified licenses. In 2000, DVS issued 17,645 limited licenses.

*Withdrawals* – Court-ordered License Suspension was studied as a representative example of how DVS processes driver license withdrawals. Once the court notifies DVS of a conviction and court suspension, DVS updates the driver's record, causing the DL/MV mainframe system to generate an Order of Suspension. The order is then verified, a copy made for DVS files, and then the original order is sent to the driver via first-class mail. If the driver did not receive the order because of an incorrect address, DVS re-mails the order if a correct address is provided.

*Habitual Problem Drivers* – Habitual problem drivers are drivers who receive a lot of traffic citations for various violations (e.g. speeding). Minnesota does not assess points against a driver's record. Instead, the state imposes penalties based on the number of violations during a given period of time, rather than the severity of the violation. Minnesota monitors two time periods ("look-backs") on a rolling basis:

- *12 months:* If a driver receives three violations in a 12-month period, DVS generates a warning letter listing the violations. If a driver receives a fourth violation in the 12-month period, the driving privilege is automatically suspended.
- *24 months:* If a driver receives five or more violations in a 24-month period, the driving privilege is automatically suspended.

At the end of the suspension, the driver must pay a $20 reinstatement fee. In 2000, DVS issued 6,858 suspensions for habitual problem drivers and sent 21,108 warning letters for "3 in 12" violations.

*Reinstatement* -- Reinstatement of a license was studied as a representative example of how DVS restores a driver's driving privilege after the driver loses his/her license. Once the driver has met the reinstatement requirements (e.g., appropriate amount of time has elapsed), the driver goes to an exam station and requests reinstatement. In the Twin Cities metropolitan area, DVS reviews the driver's record, determines the type of exam needed, and administers it. Once the driver passes the exam, the driver completes an application for a new license, and submits the reinstatement fee. The DL/MV mainframe system is then updated, and a reinstatement notice is generated. In Greater Minnesota, the driver goes to the exam station to take the exam and pay fees. Once the exam is complete, the driver receives a receipt number and contact information for the DVS Central Office. The driver then contacts the DVS Central Office, provides relevant information and the receipt number. Central Office then processes the reinstatement.

Process flow maps that graphically depict the workflow for each of the areas have been also developed and are presented in Appendix A.

## Process Summary

A customer seeking a driver's license or permit needs to show proof of identification, fill out an application, pay a fee, and take vision, knowledge and road skills exams. In response, DVS needs to verify IDs, collect fees, administer and track the exam results, and issue ID and Driver's License cards and permits.

In addition, in order to fulfill its role of administering state safety laws and regulations that improve driver safety by reducing crashes and removing unsafe drivers from state roadways, DVS needs to:

- Keep current, accurate driving records on each individual
- Ensure outside agencies have appropriate access to driver's records, while simultaneously protecting the privacy rights of the drivers
- Ensure licensed drivers maintain the skills necessary to operate motor vehicles (i.e., renewals)
- In coordination with various law enforcement agencies and courts systems, ensure drivers follow the state safety laws (i.e., through the withdrawals and the reinstatement process)

Figure 3 below depicts the multiple sources of information used by these processes, the data produced, controlling requirements governing how the processes use the information, and the mechanisms employed to manipulate the data.

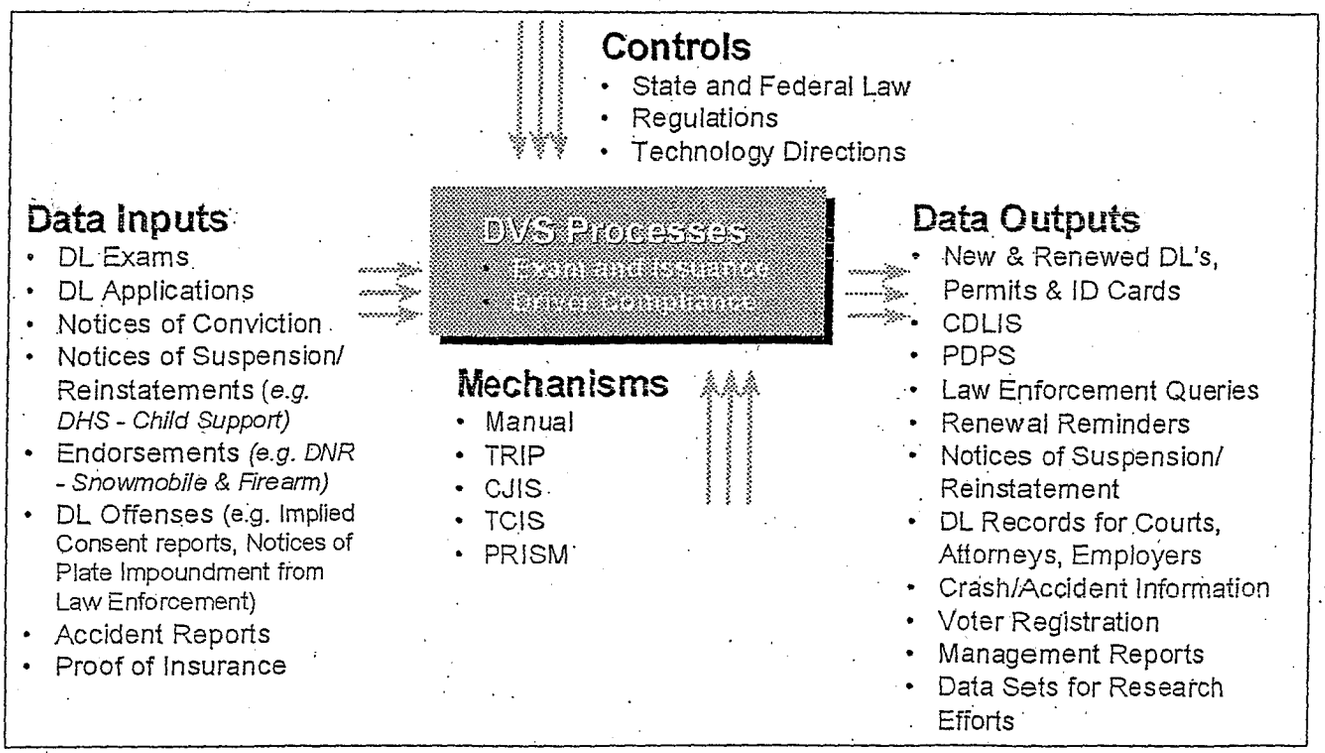



Figure 3. Driver Services Process Analysis

## Issues and Opportunity for Improvement

As the attached process maps indicate, much of the current process is conducted manually. In addition, a number of the verification processes currently performed could be automated or even eliminated if the DVS were able to make greater use of automated tools. Opportunities for process improvement include:

- Identification verification (and eventually photo verification) can be automated by increasing online access to outside agency data
- Administration, verification, notification, and results recording of all exams can be automated
- Drivers can be required to complete original and renewal applications online, which would minimize DVS' data entry efforts
- An automated system can be used to determine appropriate fees based on the type of license required (which would come from the online application) as well as renewal fees
- An automated tickler system can be used to generate all types of renewal notifications
- An automated mail/sorting system can be used to select appropriate inserts for notifications
- A real-time, direct connection between Minnesota courts and DVS could facilitate immediate exchange of Notices of Conviction, allowing DVS to issue withdrawal and suspension orders more quickly
- Documents related to driver records could be stored electronically for immediate retrieval by Driver Evaluators and other staff, as well as reduced effort for microfilming and other records management activities
- Withdrawal, revocation, and suspension orders could be generated at DVS on a real-time basis for immediate mailing to drivers

## Current External Business Partner Environment

A wide variety of stakeholders, both inside and outside government, provide or rely upon DL information maintained by DVS. These external business partners include:

### DL Agents

*Deputy Registrars* and *DL Agents* – DL Agents are licensed private individuals who provide Driver Services to citizens as an extension of DVS. DL Agents use DL information in much the same manner as DVS employees.

### Criminal Justice

*Law Enforcement* – Police and Sheriff personnel rely on DL information to provide current information on demographics, license history, citation history, and recommended disposition for drivers they encounter as part of their law enforcement duties. Law enforcement also provides notice of plate impoundment.

*Courts* – Minnesota courts provide input of accidents and driver convictions to the DL system, and access DL information for case purposes.

*Attorneys* – State attorneys, public defenders, and private attorneys access DL information to assist in preparing cases.

### Commercial

*Retailers* – The retail environment relies on Driver License and Identification cards to positively identify an individual. Specialized retailers such as gun dealers use DL and ID cards for background check purposes.

*Financial Institutions* – Financial institutions utilize Driver License and Identification cards to verify identities.

*Insurance Companies* – Insurance companies provide proof of insurance for drivers, and access driver record information about accidents to establish policies.

*Employers* – Employers (e.g., trucking companies, school districts) access DL information to understand the driving history of current and prospective employees.

### State Agencies and Organizations

*Department of Human Services* – DHS interfaces with the DL system in two areas: to enter DL suspensions or reinstatements based on current child support obligations, and to validate residency of DL applicants.

*Department of Revenue* – The Department performs on-line inquiry of the DL database for current demographic information on Minnesota drivers.

*Department of Transportation* – The Department of Transportation relies on DL accident data to track areas of the roadway that have higher incidences of traffic accidents to identify roadway that may require redesign and improvement.

*Department of Natural Resources* – The Department of Natural Resources utilizes Driver Licenses to verify identification and to indicate endorsements for firearms and snowmobiles.

*Secretary of State* – The Secretary of State receives driver demographic information for registration of voters.

*Department of Public Safety* – Other agencies within the Department of Public Safety are among the most frequent users of DL information. The Bureau of Criminal Apprehension incorporates DL information with other sources to provide a broad spectrum of criminal-related information to criminal justice users. The Office of Traffic Safety utilizes DL data for research purposes to produce studies on topics such as accident facts and bicycle safety statistics. The State Patrol queries DL data similar to other law enforcement users.

*DWI Task Force* – The DWI Task Force uses DL data to identify trends associated with enforcing DWI laws and makes policy recommendations. For example, the Task Force uses DL data to identify how often drivers with a DWI conviction obtain a subsequent conviction or to assess the effectiveness of different punishment options.

## Federal Agencies and Organizations

*American Association of Motor Vehicle Administrators (AAMVA)* – DVS maintains on-line interfaces with several AAMVAnet applications to support the cooperative exchange of problem driver information between jurisdictions. The Commercial Driver License Information System (CDLIS) supports the issuance of Commercial Driver Licenses and is designed to assist in the cooperative exchange of commercial driver information between jurisdictions. The Problem Driver Pointer System (PDPS) acts as a "pointer" for the National Driver Register and will "point" the State of Inquiry to the State of Record, where individual driver history information will be found.

*Federal Bureau of Investigation (FBI)* – The FBI maintains the National Crime Information Center (NCIC), a computerized database for criminal justice agencies making an on-line inquiry and for prompt disclosure of information in the system from other criminal justice agencies about crimes and criminals. The DL/MV database is integrated with this system as it provides information about stolen vehicles; stolen license plates, and wanted persons.

*National Law Enforcement Telecommunications Network (NLETS)* – NLETS is a computer-controlled message switching network linking local, state, and federal agencies together for the purpose of information exchange. The Minnesota DL database is interfaced with NLETS to provide Minnesota law enforcement with access to out-of-state criminal justice information, as well as offer Minnesota information to the out-of-state law enforcement community.

## Current Technical Environment

The technical environment currently supporting the DS Program includes a set of technology components, with the central application and database system located at Intertech, the Minnesota Department of Administration's data center. As described above, DL information is entered, stored, and retrieved by a variety of organizations for numerous purposes. A broad collection of technologies and protocols support both on-line and batch processing within the existing environment. Most users require information during regular business hours, however law enforcement users access DL data on a 24-hour, 7 day-per-week basis.

The diagram on the next page illustrates the technical component and interface environment, with a short summary of selected components below.

### Connectivity Environment

*Dial-Up* – Many users have dial-up access to the DVS mainframe environment, utilizing 3270 for terminal emulation.

*9600 Controllers* – Some remote users connect with 9600 controllers, and Rumba PC-to-Host for 3270 emulation. All 9600 controllers are expected to be replaced within six months.

*TCP/IP* – Headquarters staff and state-owned exam stations currently connect to the mainframe using IP (Internet Protocol). The future DVS connectivity vision for all internal and external business partners is 100% IP.

### Mainframe Environment

*Mainframe Applications* – DVS online and batch mainframe applications are programmed in COBOL, and execute within CICS. For DL, there are 50 CICS online transactions and 140 batch programs, as well as some shared programs with other DVS applications.

*Mainframe Database* – DVS data is stored in a Cincom Supra database on an IBM mainframe computer housed at Intertech. DL data is stored in 27 fixed-record Supra files, plus three additional files shared with the MV database.

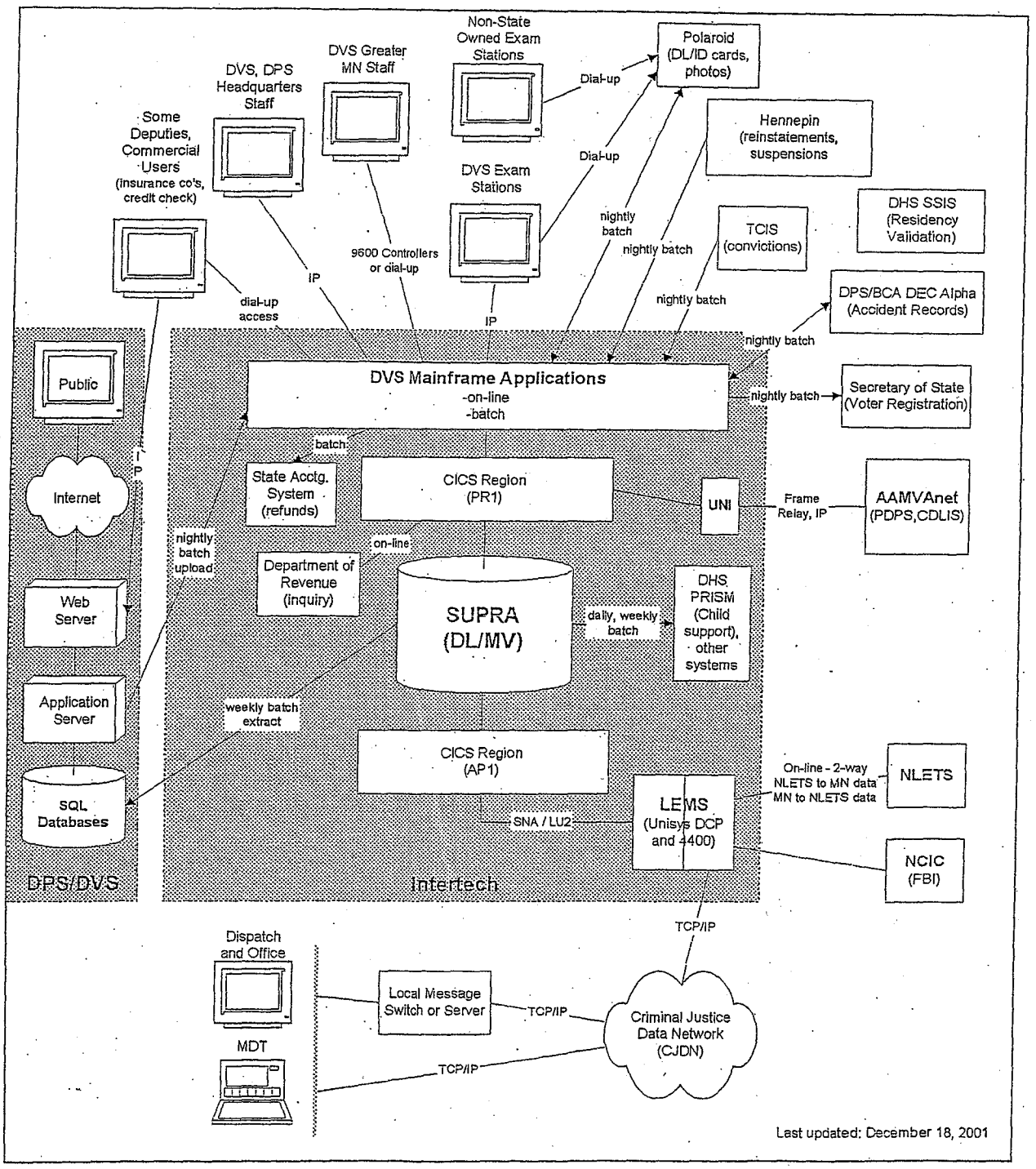



Figure 4. DL/MV Component and Interface Diagram

# Business Case

This section of the Feasibility Study Report builds the business case for improving the DS Program. It documents the business environment issues faced by DVS, and details technical considerations that will influence the analysis of potential improvement solutions.

## Business Problem/Opportunity

Through the review of background documentation, interviews, focus groups, and walkthroughs with DS Program staff, and extensive feedback from external business partners, DVS has identified significant problems and related opportunities related to its business environment.

### DVS Business Environment Issues

The DS Program currently faces a number of issues related to its business environment, both internally within DVS and in its interaction with external business partners. A thorough understanding of the business environment is an important step to analyzing and identifying appropriate improvement opportunities.

*Information in the DL Database is Not Always Accessible or Reliable* – External business partner users require the ability to retrieve driver records in a timely, reliable manner. However, law enforcement and others report periodic downtime and slow connection speed, limiting their ability to have the best possible information to perform their duties. Attorneys and other court-related users may not receive certified DL records in a timely fashion unless they make special requests of DVS.

*Information in the DL Database Is Not Current* – The DL Database is not current due to heavy reliance on keying data entry in the Issuing Unit. Additionally, manual data entry is required since many DL Exam Stations do not have connectivity to the database, and therefore cannot update the database with real-time customer data. In some instances, data submitted by DL Exam Stations takes up to three weeks to be entered into the DL database.

*DL Data Provides Limited Support for Law Enforcement Purposes* – Law enforcement officers rely on the DL system to provide the most up-to-date information possible to support decisions required during policing activities. Law enforcement needs a system that analyzes DL records and performs predictive and directive activities based on that data. Law enforcement would like the ability to view more detailed driver information, license history, and citation history. Without timely, predictive and comprehensive data, law enforcement may take either insufficient or inappropriate actions against drivers.

*Heavy Reliance on Manual Processes Reduces DS Program Effectiveness* – Processes performed manually at DVS include recording vision and knowledge test results, sorting applications and records of exam, entering new applications, separating voter registration paperwork, preparing mailings, and filing documents that impact the DL record. This extensive use of paper documents (e.g. applications, Implied Consent Notices) decreases data integrity since hand-written forms may be illegible, leading to data entry errors. As a result, centralized keying data entry in the Issuing Unit at DVS Headquarters increases the

processing time to update the DL database with applicant information. This manual processing leads to delays in issuing driver licenses and updating DL records.

*Information Generated by External Partners is Not Always Transferred Effectively to the DL Database* – Some external business partners (e.g. DHS) have the ability to initiate withdrawals and reinstatements of driver licenses. However, external partners do not always receive feedback from the DL system to know whether the change they requested has appropriately impacted the driver license. Consequently, driver records may inaccurately reflect a suspension or reinstatement status, causing law enforcement officers to take unwarranted actions.

*The DL System Presentation is Not User Friendly* – The current presentation and organization of DL information makes it difficult for users to read and interpret DL records. For example, DL records include numerous codes that require a reference manual or experience to understand. Training on how to use the system and read DL records may not be adequate for external stakeholders. Lack of user friendliness decreases the efficiency and effectiveness of stakeholders as they rely on the DL system to support their business needs.

*DVS Cannot Track Customer Activities in Real-Time* – Because data is not updated in real-time, some customers "shop" Exam Stations until they can obtain a Driving Permit or Driver License. Consequently, DVS may issue Driver Licenses to unqualified customers.

*DVS Cannot Effectively Track Fraud Within the System* – Verifying customer identities is critical to reducing fraud, and DVS staff and external stakeholders depend on both DL and ID cards as reliable sources. Since many Greater Minnesota Exam Stations do not have access to the DL Database and cannot retrieve customer records for verification purposes, fraud incidents may occur more frequently as customers apply for and receive multiple driver licenses using different names and addresses. Overall, DVS needs to be able to track and flag potential fraud indicators to improve tracking of customers that apply for more than one duplicate DL or ID card.

## Technical Environment Considerations

Along with issues related to business processes, various technical considerations are also documented. These items are important to take into account as potential solutions are defined and analyzed.

*Supra Database Platform Limits Program Support* – The older technology structure of Supra databases limits the ability of the DS Program to meet the needs of its users. The inflexibility of its record structure inhibits the ability to make changes in response to legislative or external business partner requirements. Also, the lack of decision support query capabilities limits the usefulness of DL information to answer policy-related questions.

*Supra Is Not a Long-Term Viable Platform* – DPS/OTSS and/or DVS must be able to provide on-going support to DL services, but the current database environment is not a long-term viable solution. Additionally, Intertech is eliminating support of Supra database systems, and encouraging Supra users to transition to a new platform.

*Internal and External Users Must Continue to Reliably Access DL Information* – Changes or additions to system components (such as database, application programs, or shadow systems) or physical location must allow current and future interfaces to remain secure, efficient, and reliable on a 24 hour/7 day per week basis. The need for continued data security is tantamount: As new applications allow business partners and the general public to perform self-service functions, DVS must ensure that they can only access the data to which they are entitled, and all other information remains secure and cannot be compromised

*Accuracy and Completeness of Data Is a Technical As Well As a Process Issue* – Future technical platform changes will involve significant data migration, thus requiring significant data cleanup. Process changes need to be implemented correspondingly to keep data clean.

*E-Government Efficiencies and Expectations are Driving Change* – DL services to be offered to the public for self-service imply increased requirements for application and data access. Fortunately, new tools are providing the technical opportunity to provide this improved access.

*Reengineering of DL Data Schemas Is Not a Simple "Porting" Activity* – Supra is not a true relational model, so moving it anywhere will cause, in addition to big cleanup efforts, a need for redesigning the data model. During any redesign, the current integration with MV data must be maintained. However, imposing relational constraints would help with some data inaccuracy issues.

# Operational Vision and Opportunities

This section of the Feasibility Study Report presents the vision, goals and objectives of the DS Program, given the DVS current issues that need to be addressed. Additionally, with the understanding of the baseline operating and technical environment, the scope of DVS influence will be defined, illustrating where DVS can itself implement improved processes and systems. Finally, some points of consideration are documented that were utilized as part of the analysis of solutions to realize the DS Program operational vision.

## Project Vision, Goals, and Objectives

### Project Vision

The project vision statement is a compelling, conceptual image of the desired future that answers the question "What do we want to be?"

> The vision of the DVS Improved Driver License System Project is to enhance public safety by modernizing and improving the Driver Services Program.

### Project Goals

In order to achieve the project vision, DVS has established a number of goals that will enable DVS employees, external business partners, and customers to conduct business electronically and to access real-time, accurate information. DVS' ability to respond swiftly to customer needs and legislative requirements will also be enhanced.

Key business goals of the Improved Driver License System Project include:

- Streamline and automate data collection activities
- Enhance ability of stakeholders to use DL data to make more effective enforcement and policy decisions
- Build systems that support DVS external business partners

### Project Objectives

Related project objectives have been defined that clarify how DVS will implement its future vision and realize its goals. These objectives are presented in the table on the following page along with the relationship between each and the issues it helps address.

| No. | Objective | Information is not current | Does not effectively prevent fraud | Heavy reliance on manual processes | Cannot track customer activities in real-time | Provides limited support for law enforcement | Information is not always accessible or reliable | External information not always transferred effectively | System not user friendly |
|---|---|---|---|---|---|---|---|---|---|
| **Goal 1: Streamline and automate data collection activities** | | | | | | | | | |
| 1 | Allow access to all DL and related data from any Exam Station, Central Office unit and by staff working in the field | * | * | | * | | | | * |
| 2 | Reduce administrative workload by automating various manual tasks | * | | * | | | | * | * |
| 3 | Reduce time to issue a driver license to two business days | * | * | * | | | | | |
| 4 | Update driver records within 1 business day of receipt of original or renewal application or record change request | * | * | * | | | | | |
| 5 | Provide all Exam Stations with the ability to retrieve and view driver records on-line | * | * | | | | | | * |
| 6 | Develop the ability to capture original and renewal application data at the source | * | * | * | * | * | | * | * |
| 7 | Provide each Exam Station with standard, enterprise-wide information technology tools | * | * | * | * | | | | * |
| 8 | Provide automated data verification to ensure that DVS maintains data that is accurate and reliable | * | * | * | | * | | | * |
| **Goal 2: Enhance ability of stakeholders to use DL data to make more effective decisions** | | | | | | | | | |
| 9 | Provide business partners with the most up-to-date, accurate driver data possible | * | | | | * | * | * | |
| 10 | Allow for seamless integration with other DVS and external information systems | * | | * | | * | | * | |
| 11 | Improve the ability of DVS management to plan and budget for the DL Program by providing better data | | | | | | | | * |
| **Goal 3: Build systems that support DVS external business partners** | | | | | | | | | |
| 12 | Increase the integrity of the Minnesota DL and ID card as a positive form of identification for citizens | | * | | * | | | | |
| 13 | Provide information to external partners on a 24-hour, 7-day-per-week basis | | | | | * | * | | |
| 14 | Develop more user-friendly interfaces | | | * | | | | | * |

Table 1. How Project Goals and Objectives Relate to DVS Problems/Opportunities

## DVS Scope of Influence

The current DL environment covers a broad range of business processes and technologies. Many of these processes and technologies can be improved upon to achieve the vision, goals, and objectives previously defined. However, only by understanding those areas under DVS' scope of influence can a responsible analysis of where DVS should put its resources be performed.

The diagram presented earlier can be utilized to depict the DVS scope of influence. The area inside the shape identifies those elements of the DL environment that DVS can impact.

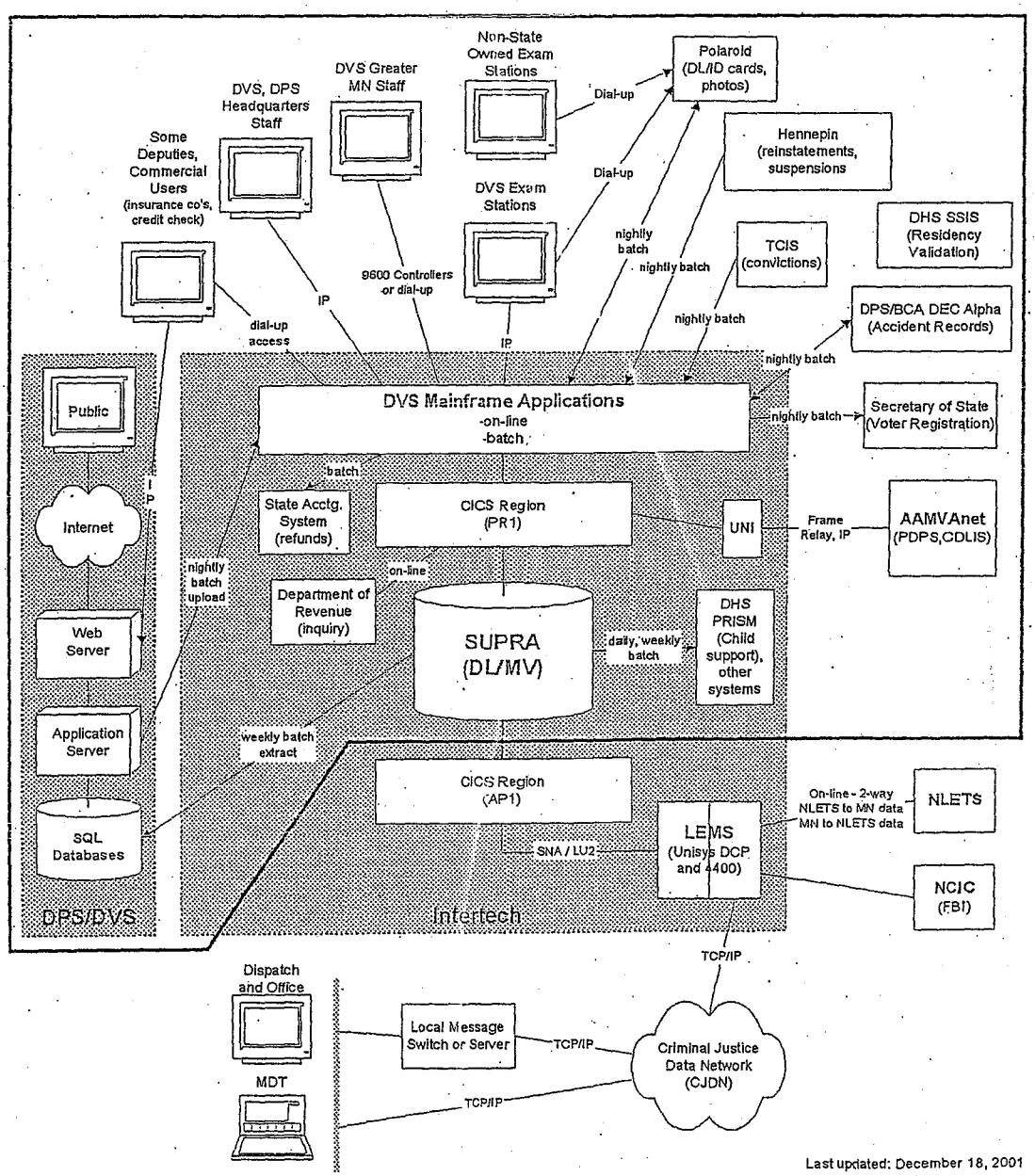



Figure 5. Scope of Influence within Component and Interface Diagram

In summary, DVS controls:

- Database and applications
- Connectivity to DVS field operations, non-LEMS law enforcement and courts, other external partners (e.g., Deputies, DHS), and the public
- DVS business practices and processes
- Infrastructure components and location

DVS does not control:

- Connectivity and presentation to law enforcement through LEMS
- Law enforcement and court processes and systems that collect driver-related information (e.g., violations, convictions, reinstatements) that is passed to DVS databases
- CriMNet directions and implementation
- Legislative and court mandates and requirements

This report serves to identify the initiatives that DVS can lead to implement does not control:

## Analysis Points of Consideration

Through the analysis of information from all preceding steps (current business problems, technical considerations, the baseline environment and scope of influence, and future operational vision and objectives), some points of consideration were documented to guide the development of recommended projects. These include:

*Manual and paper processing is a very significant issue* – The extensive manual processing early in the business process lifecycle contributes to many of the current problems such as non-current and inaccurate information, slow customer service, and opportunities for fraudulent transactions. However, ample opportunities for improvement exist.

*Database migration addresses both current problems and future needs* – Migration of the core DL database away from the current legacy system will provide a number of improvements, as it supports flexibility and data accessibility, allows for a viable, stable, and supportable environment, and positions DVS for future increased access requirements.

*Improved customer access and interfaces provide significant benefits* – Benefits from improvements in customer access and interfaces include allowing field operations to perform on-line, real-time transactions and providing self-service applications to external business partners and the public. Benefits will be better realized with self-help applications that are easy to understand.

*There is no silver bullet* – It is important to note that no single packaged solution exists. New initiatives and existing initiatives are all part of the solution to allow the DS Program to address its current problems and achieve its operational vision.

# Recommended Projects

This section of the Feasibility Study Report presents the recommended projects for the Improved DL System Project. While each project can be described and conducted independently, there are interdependencies as well as internal resource limitations that will influence their implementation. These dependencies and constraints are described within this section as well as the overall implementation roadmap in the next section. The recommended projects have resulted from the collection and thorough analysis of DS Program information, including current business issues (internal and external), current technical considerations, the current baseline environment and scope of influence, and the current DS Program operational vision.

## Summary of Recommended Projects

Four projects are recommended as the best opportunities in which to deploy the financial and human resources available to DVS for the Improved DL System Project. These projects include:

- Driver Compliance Improvement Project
- Reduction of Issuance Fraud Project
- Database Migration/Redesign Project
- System Redesign Initiative

These recommended projects were determined based on the current issues and opportunities that DVS faces, and will build upon both various planning and implementation activities currently underway within DVS. Prior to embarking upon this feasibility study, DVS had already recognized the opportunity to improve a number of its business functional areas and has consequently embarked upon several improvement projects. Within each of the recommended projects, DVS vision and planned initiatives are noted.

As part of the Improved DL System Project, DVS will contract with an experienced, full-time project manager to coordinate and lead project activities. It is recommended that this project manager support all projects recommended in this report, in order to ensure the necessary coordination among DVS business and technical teams and vendor personnel. The costs of this project management support are split among the recommended projects and detailed in the estimated cost sections of the project descriptions.

## Relationship of Recommended Projects to Goals and Objectives

As part of the analysis, it is important to understand how each recommended project supports the goals and objectives defined in an earlier section. Table 2 below relates each recommended project to the goals and objectives of the Improved DL System Project that were presented earlier.

| | | Recommended Projects | | | | | |
|---|---|---|---|---|---|---|---|
| No. | Objective | Driver Compliance Improvement Project | Reduction of Issuance Fraud Project | Core Database Migration Project | Database Redesign Initiative | | |
| **Goal 1: Streamline and automate data collection activities** | | | | | | | |
| 1 | Allow access to all DL and related data from any Exam Station, Central Office unit and by staff working in the field | | * | | * | | |
| 2 | Reduce administrative workload by automating various manual tasks | * | | | * | | |
| 3 | Reduce time to issue a driver license to two business days | * | * | | * | | |
| 4 | Update driver records within 1 business day of receipt of original or renewal application or record change request | * | * | | * | | |
| 5 | Provide all Exam Stations with the ability to retrieve and view driver records on-line | | * | | | | |
| 6 | Develop the ability to capture original and renewal application data at the source | * | * | | | | |
| 7 | Provide each Exam Station with standard, enterprise-wide information technology tools | | * | | * | | |
| 8 | Provide automated data verification to ensure that DVS maintains data that is accurate and reliable | * | * | * | * | | |
| **Goal 2: Enhance ability of stakeholders to use DL data to make more effective decisions** | | | | | | | |
| 9 | Provide business partners with the most up-to-date, accurate driver data possible | * | * | * | * | | |
| 10 | Allow for seamless integration with other DVS and external information systems | | | * | * | | |
| 11 | Improve the ability of DVS management to plan and budget for the DL Program by providing better data | * | | * | * | | |
| **Goal 3: Build systems that support DVS external business partners** | | | | | | | |
| 12 | Increase the integrity of the Minnesota DL and ID card as a positive form of identification for citizens | | * | | | | |
| 13 | Provide information to external partners on a 24-hour, 7-day-per-week basis | * | * | | * | | |
| 14 | Develop more user-friendly interfaces | | | | * | | |

Table 2. How Project Goals and Objectives Relate to Recommended Projects

## Relationship of Recommended Projects to Issues

As noted in the introductory paragraphs of this section, the recommended projects have been built on the current business issues and technical considerations developed as part of the analysis. The following table presents that relationship:

| | Driver Compliance Improvement Project | Reduction of Issuance Fraud Project | Database Migration/ Redesign Project | System Redesign Initiative |
|---|---|---|---|---|
| **Business Process Issues** | | | | |
| Information in the DL Database Is Not Always Accessible or Reliable | ✓ | ✓ | | |
| Information in the DL Database Is Not Current | ✓ | ✓ | | |
| DL Data Provides Limited Support for Law Enforcement Purposes | ✓ | ✓ | ✓ | ✓ |
| Heavy Reliance on Manual Processes Reduces DS Program Effectiveness | ✓ | ✓ | | |
| Information Generated by External Partners Not Always Transferred Effectively | ✓ | | | |
| The DL System Presentation Is Not User Friendly | ✓ | ✓ | | |
| DVS Cannot Track Customer Activities in Real-Time | | ✓ | | |
| DVS Cannot Effectively Track Fraud Within the System | | ✓ | ✓ | ✓ |
| **Technical Considerations** | | | | |
| Supra Database Platform Limits Program Support | | | ✓ | |
| External Business Partners Must Continue to Reliably Access DL Information | ✓ | ✓ | ✓ | ✓ |
| COBOL on Supra Is Not a Long-Term Viable Platform | | | ✓ | |
| Accuracy and Completeness of Data Is a Technical As Well As a Process Issue | | | ✓ | ✓ |
| E-Government Efficiencies and Expectations are Driving Change | ✓ | ✓ | ✓ | ✓ |
| Reengineering of DL Data Schemas Is Not a Simple "Porting" Activity | | | | ✓ |

Table 3. Relationship of Recommended Projects to Current Issues

Each of the recommended projects is described in more detail in the subsections below.

## Recommended Project: Driver Compliance Improvement Project

This project would focus on necessary improvements of the Driver Compliance process to better allow the State, and specifically law enforcement and the entire criminal justice community, to identify, track, and manage problem drivers.

The project's goal is to provide improved data currency (up-to-date records) and data accuracy to DVS and law enforcement personnel, thereby improving the ability to deal with problem drivers. The first phase would center on automating the data collection and validation of implied consent withdrawals from various information providers (e.g., law enforcement agencies, courts, Department of Human Services). Currently this information is provided in a variety of formats ranging from electronic to paper. Record updates occur through manual processes to input data into the DL database. Technologies such as Intranets and Extranets could dramatically change the efficiency and effectiveness of data exchange with these DVS business partners, and each technical solution requires fundamental redesign of the business process. These changes would also provide better efficiency within DVS, lowering future operational costs.

The second phase would expand the first phase's scope to include DWI and habitual problem driver suspensions. Like phase one, this phase would automate the data exchange between the criminal justice community and DVS to ensure that suspension and withdrawal orders are issued as quickly as possible.

| Driver Compliance Improvement Project |
|---|
| **Supports Stated Objectives** |
| Provide information to external partners on a 24-hour, 7-day-per-week basis |
| Update driver records within 1 business day of receipt of original or renewal application or record change request |
| Provide business partners with the most up-to-date, accurate driver data possible |
| Reduce time to issue a driver license to two business days |
| Reduce administrative workload by automating various manual tasks |
| Develop the ability to capture original and renewal application data at the source |
| Provide automated data verification to ensure that DVS maintains data that is accurate and reliable |
| Improve the ability of DVS management to plan and budget for the DL Program by providing better data |
| **Addresses Current Issues** |
| Information in the DL Database Is Not Always Accessible or Reliable |
| Information in the DL Database Is Not Current |
| DL Data Provides Limited Support for Law Enforcement Purposes |
| Heavy Reliance on Manual Processes Reduces DS Program Effectiveness |
| Information Generated by External Partners Not Always Transferred Effectively |
| The DL System Presentation Is Not User Friendly |
| External Business Partners Must Continue to Reliably Access DL Information |
| E-Government Efficiencies and Expectations are Driving Change |

The third phase would automate the reinstatement process. This phase would prove more challenging than the first two phases, as reinstatements often are more complex since they involve other functions such as testing, issuance, and customer service.

### Benefits

Benefits arising from the Driver Compliance Improvement Project include:

- Provides for more current and accurate information to law enforcement and other stakeholders regarding problem drivers, including repeat DWI offenders

- Allows for a more immediate update of implied consent, driver suspensions, reinstatements, and notices of conviction information in DVS databases
- Reduces the flow of paper between external partners and DVS
- Improves likelihood of complete and correct transactions by moving error-checking and feedback from batch functions to on-line entry screens
- Supports additional instances of user-friendly, self-service applications to external business partners

## DVS Vision

DVS has planned a number of infrastructure-related activities that will support Driver Compliance improvement efforts. These include:

- Acquisition of the Verastream software tool, which supports the development of Web-based applications to access information contained in mainframe applications and databases
- Deployment of a Web server environment to support future business partner and public e-Government functions
- Development of Web Communities and associated applications, creating a unique Web portal-based environment for business partners to conduct DVS-related transactions

## Recommended Implementation Approach

The following implementation approach to the Driver Compliance Improvement Project is recommended:

### *Analysis of Current Business Process*

DVS first needs to understand the business process needs and develop a tactical, e-Government view of improved Driver Compliance processes and services. This analysis would take into account and document the business partners' desire for new Driver Compliance services, and would detail current external business partner functions as they relate to providing or accessing DL information. This analysis should incorporate all paper, on-line, and batch processes, and include information about data sources and business logic.

Deliverables

- Documentation of current business processes
- Identification of the roles and responsibilities of personnel in external partner organizations that manage data
- Definition of changes for new business functions, including both business structure and business processes

Estimated Personnel/Timeframe/Costs

- DVS Business Staff: 3 staff for 2 months at 40% time ($27K)
- Consultant Staff: 1 staff for 2 months at 100% time ($39K)

*Analysis of Current Technical Environment*

DVS would also need to understand the technical environment and current applications that are used by external business partners, including the ability to access State networks or the Internet and the utilization of application systems that provide source information for DL transactions. This analysis would focus on areas such as data entry, data editing and maintenance, reports and queries, and interfaces.

Deliverables

- Documentation of opportunities for technical system improvement
- Definition of changes for new technical environment, including infrastructure, application, and security requirements

Estimated Personnel/Timeframe/Costs

- DVS Business Staff: 1 staff for 2 months at 40% time ($9K)
- DVS/OTSS Technical Staff: 2 staff for 2 months at 40% time ($18K)
- Consultant Staff: 1 staff for 2 months at 100% time ($39K)
- External Partner Staff: as needed from law enforcement, courts, etc. (approximately 40 hours per individual)

*System Requirements and Design*

Based on the analysis of the current business and technical environment, DVS will design the future processing environment. The design concept developed in this stage is based on findings from the current environment analysis, as well as input from internal and external stakeholders. Key steps in this stage include specifying process steps, who performs process activities, and new tools supporting the processes. Any required organizational, policy, and personnel changes will also be identified during this stage. To develop automated tools, functional and system architecture design specifications will be defined.

Deliverables

- Requirements and design of changes to the current operating environment, including data entry functions, batch processing, usage of data, and related interface mechanisms
- Requirements and design of changes to the current technical system, including system interfaces, applications, operating systems, storage, reporting tools, etc.
- Identification and design of the hardware platform for new collection of data, if needed
- Identification and design of the development tools and database for new applications
- Development of testing and transition plans

Estimated Personnel/Timeframe/Costs

- DVS Business Staff: 2 staff for 5 months at 40% time ($45K)
- DVS/OTSS Technical Staff: 2 staff for 5 months at 80% time ($90K)
- Consultant Staff: 3 staff for 5 months at 100% time ($292.5K)

*System Development and Implementation*

The final step includes development and implementation of the new system, with related testing, training, and deployment activities. This is a difficult step to quantify at this stage given its dependency on the changes identified and the new documented business and technical design in the previous steps. The contracted vendor will provide most of this support, with DVS, OTSS, and external partner staff being significantly involved before deployment into full production, as acceptance testing and training activities need to be performed. A train-the-trainer model would be recommended for this activity, promoting interaction between DVS business and technical trainer staff and its external business partner users.

**Deliverables**

- Development of applications and databases, and installation of hardware, if necessary
- Training classes for DVS business staff, external partner staff, and DVS/OTSS technical support staff
- Execution of system and acceptance testing activities

**Estimated Personnel/Timeframe/Costs**

- DVS Business Staff: 4 staff for 1 month at 100% time ($45K)
- DVS/OTSS Technical Staff: 3 staff for 4 months at 40% time ($54K)
- Consultant Staff: 3 staff for 4 months at 100% time ($234K)

## Recommended Technology Feature Sets

The technologies utilized for this project should incorporate the following features:

*Direct connectivity* – If direct connectivity for external business partners is available it is preferable to minimize risk of reduced performance and availability. However, access through the Internet is cheaper and more easily deployed, and would be viable for e-Government functions that are not high-volume or response time critical.

*Web-to-host software* – For development of on-line entry screens and deployment of solutions, DVS should leverage Web-to-host software. Web-to-host software is connectivity software that enables secure browser-based access to information that resides on mainframes and other host computer systems. It is designed to turn any Java-enabled Web browser into a secure workstation, and mainframe applications can be enabled for Web-to-host access without changing source code. The current DVS product tool, Verastream Host Integrator Solution by WRQ, is a good choice as it provides powerful application development and integration functionality between Web screens and mainframe programs.

*Potential usage of 3rd party software such as TraCS* – DVS should incorporate the results of its recent study of third-party traffic and criminal software, which provides field data collection for eTicketing and collision reporting. Software such as this could eliminate much of the paper and manual processing for collection of this data within the law enforcement community, thus promoting quicker and more accurate information in DVS databases. Gartner evaluated the State of Iowa application named TraCS as part of our analysis. Before

choosing TraCS or any other product, DVS and its external partners must ensure that the system has been fully and successfully deployed in other jurisdictions, and that necessary rights are granted for potential changes to application programs. Also, any implementation of new traffic and criminal software will significantly impact officer reporting processes. DVS must work with this business partner community during the early analysis activities to understand if law enforcement has the funding, technology, and training capacity to implement a significantly redesigned processing environment.

## Estimated Project Length

Using the existing software tools and initial portal environment already in place, an estimated 15-month period would be required for the Driver Compliance Improvement Project. The project length is quite dependent on the extent of the processes and technologies identified as change opportunities during the early analysis efforts. The length may also be impacted by the ability of DVS to schedule and work with its external partners during activities such as requirements analysis, acceptance testing, training, setup, and change management.

## Estimated Cost

Estimated costs for this project are summarized below. Actual costs will be dependent on a number of factors, including needed infrastructure requirements allowing secure transactions by authorized users through the Internet, the proficiency of DVS/OTSS staff or contractors in development of Web-based transactional applications, and the leverage of State resources versus reliance of contracts to the private sector.

| Activity | DVS Cost |
|---|---|
| Analysis of Current Business Process | $66,000 |
| Analysis of Current Technical Environment | $66,000 |
| System Requirements and Design | $427,500 |
| System Development and Implementation | $333,000 |
| Project Manager | $120,000 |
| Total | $1,012,500 |

Assumptions used for cost estimates include:

- In-house business staff, labor & fringe = $90K/yr/FTE * 1.5 = $135K/yr/FTE (1.5 to factor in overtime/backfill for in-house staff)
- In-house IT staff, labor & fringe = $90K/yr/FTE * 1.5 = $135K/yr/FTE (1.5 to factor in overtime/backfill for in-house staff)
- Consulting vendor staff = $234K/yr ($150/hr * 130 hr/month)
- Contracted project manager = $120K/yr/FTE (12 months support charged to project)

## Key Considerations

There are a number of considerations that need to be documented and potentially addressed for implementation of an improved Driver Compliance processing environment, including:

- Technical
  - Development of secure access environment

  - Current DVS technology and application directions
  - Reliability of connectivity through the Internet
- Organizational/Change Management
  - Impact of changes to staff not directly controlled by DVS, such as changes to current business processes and the ability and desire of staff to use computers to perform on-line transactions

## Recommended Project: Reduction of Issuance Fraud Project

This project would focus on necessary improvements of the Issuance process to allow the State to better limit the opportunity for residents to obtain fraudulent driver licenses. Building upon the Paperless Application and the On-Line Issuance and Renewal projects that have recently been initiated, DVS should look for opportunities to streamline this process and reduce issuance fraud. The Issuance process establishes the base record upon which DVS tracks driver histories. Quick, efficient, non-fraudulent creation and maintenance of the initial driving record provides the foundation for data availability to law enforcement and other interested parties while providing the base repository used to take actions against the driving privilege.

| Reduction of Issuance Fraud Project |
|---|
| **Supports Stated Objectives** |
| Provide information to external partners on a 24-hour, 7-day-per-week basis |
| Provide business partners with the most up-to-date, accurate driver data possible |
| Increase the integrity of the Minnesota DL and ID card as a positive form of identification for citizens |
| Reduce time to issue a driver license to two business days |
| Update driver records within 1 business day of receipt of original or renewal application or record change request |
| Provide automated data verification to ensure that DVS maintains data that is accurate and reliable |
| Provide all Exam Stations with the ability to retrieve and view driver records on-line |
| Develop the ability to capture original and renewal application data at the source |
| Allow access to all DL and related data from any Exam Station, Central Office unit and by staff working in the field |
| Provide each Exam Station with standard, enterprise-wide information technology tools |
| **Addresses Current Issues** |
| Information in the DL Database Is Not Always Accessible or Reliable |
| Information in the DL Database Is Not Current |
| Heavy Reliance on Manual Processes Reduces DS Program Effectiveness |
| The DL System Presentation Is Not User Friendly |
| DVS Cannot Track Customer Activities in Real-Time |
| DVS Cannot Effectively Track Fraud Within the System |
| External Business Partners Must Continue to Reliably Access DL Information |
| E-Government Efficiencies and Expectations are Driving Change |

The first phase of this project would center on improving the ability of DVS staff to verify the identity of an applicant. The main objective is to eliminate the opportunity to obtain a duplicate license, or to obtain a Minnesota license when there is information about the individual that would cause the application to be denied.

The second phase of the project would concentrate on improving the management of the issuance process through workflow automation. The objective of this effort is to ensure that customers and DVS employees are following the laws and regulations of issuance, such as taking appropriate exams and eliminating the ability to shop exam stations.

This project would incorporate updated processes with new workflow application software and databases to improve the ability for DVS to query and check identity and to track and manage the applicant throughout the issuance process.

### Benefits

Benefits arising from the Reduction of Issuance Fraud Project include:

- Improved tools with which to limit the ability to obtain fraudulent licenses

- Increased ability to track customer activities and information in real-time
- Improved customer service
- Improved currency and accuracy of data in DL database
- Improved process efficiency and effectiveness

## DVS Vision

DVS has begun planning and implementation of various initiatives to promote improved efficiency and e-Government automation of the Issuance process. These include:

- Deployment of network connectivity to Exam Stations and Driver License Agents
- Discussions with Polaroid (current DL photo and license card vendor) regarding future opportunities
- Initiation of the Paperless Application Project to automate certain license applications
- Initiation of the On-line Issuance and Renewal Project

## Recommended Implementation Approach

The following implementation approach for the Reduction of Issuance Fraud Project is recommended:

### *Analysis of "As Is" Current Environment*

The first activity is to develop a picture of the current environment as it relates to the issuance process. This involves documenting the inputs and outputs of the process; the steps involved in the processes, who performs the steps, what information is required to perform the steps, and what manual and automated tools are used. Other key documentation perspectives include cycle time and process costs, which provide baseline measurements against which to judge future system performance.

#### Deliverables

- Documentation of current business processes, including process inputs and outputs, data usage, responsibilities, and current tools

#### Estimated Personnel/Timeframe/Costs

- DVS Business Staff: 2 staff for 3 months at 60% time ($40.5K)
- Consultant Staff: 2 staff for 3 months at 100% time ($117K)

### *Develop Conceptual Vision*

Based on the "as-is" analysis, DVS will next develop a conceptual vision of the future environment. The concept developed in this stage is based on findings from the current environment analysis, as well as input from internal and external stakeholders. It will guide development of system requirements and design in the next step, and also serves to communicate the vision of the issuance process to management and other stakeholders. The conceptual vision should identify any legislative changes that are required to allow DVS to achieve its desired future state.

**Deliverables**

- Issuance process conceptual vision (or concept of operations), including identification of necessary legislative changes

**Estimated Personnel/Timeframe/Costs**

- DVS Business Staff: 2 staff for 1 month at 40% time ($9K)
- Consultant Staff: 1 staff for 1 month at 100% time ($19.5K)

*System Requirements and Design*

DVS will next develop the system requirements and design of the improved issuance processing environment. The requirements and design developed in this stage is based on the conceptual model defined above, and will incorporate both new processes and technology. Key steps in this stage include specifying process steps, who performs process activities, and new tools supporting the processes. Any required organizational, policy, and personnel changes will also be identified during this stage. To develop automated tools, functional and system architecture design specifications will be defined.

**Deliverables**

- Requirements and design of the new operating environment, including data entry functions, batch processing, usage of data, and related interface mechanisms
- Requirements and design of the new technical system, including system interfaces, applications, databases, operating systems, storage, reporting tools, etc.
- Identification and design of the hardware and operating system platform for new collection of data
- Identification and design of the application programs to support new data entry and workflow processes
- Identification and design of the database structure and necessary data conversion programs required to populate the database that will support the new issuance process
- Procurement of additional hardware and software licenses
- Development of testing and transition plans

**Estimated Personnel/Timeframe/Costs**

- DVS Business Staff: 3 staff for 8 months at 40% time ($108K)
- DVS/OTSS Technical Staff: 2 staff for 8 months at 40% time ($72K)
- Consultant Staff: 3 staff for 8 months at 100% time ($468K)
- Hardware, Database, and Application Software: estimate ($450K)

*System Development, Pilot, and Full Implementation*

The final step includes development, pilot, and implementation of the new system, with related testing, training, and deployment activities. It is challenging at this early stage to understand the full scope of this part of the project effort, as much of its scope will be defined through the

results of previous steps, including any necessary additional hardware and network equipment. The contracted vendor will provide most of this support, with significant assistance from DVS business staff (both at headquarters and in the field stations) and DVS/OTSS technical staff during pilot, testing, training, and full deployment. A train-the-trainer model would be recommended for the significant operational training required for this project (as recommended for the Driver Compliance Project).

**Deliverables**

- Development of applications and databases, and installation of necessary hardware
- Training classes for DVS business staff, external partner staff, and DVS/OTSS technical support staff
- Execution of system and acceptance testing activities

**Estimated Personnel/Timeframe/Costs**

- DVS Business Staff: 3 staff for 3 months at 80% time ($81K)
- DVS/OTSS Technical Staff: 3 staff for 8 months at 40% time ($108K)
- Consultant Staff: 3 staff for 8 months at 100% time ($468K)

## Conceptual Technology Approach

A conceptual model for the future issuance environment is provided below. It comprises a new database incorporating new data and data structures, separate from the existing core Driver License database. It would provide DVS an opportunity to become familiar with additional modern application development tools and relational databases (such as DB2 or Oracle) separate from the existing system.

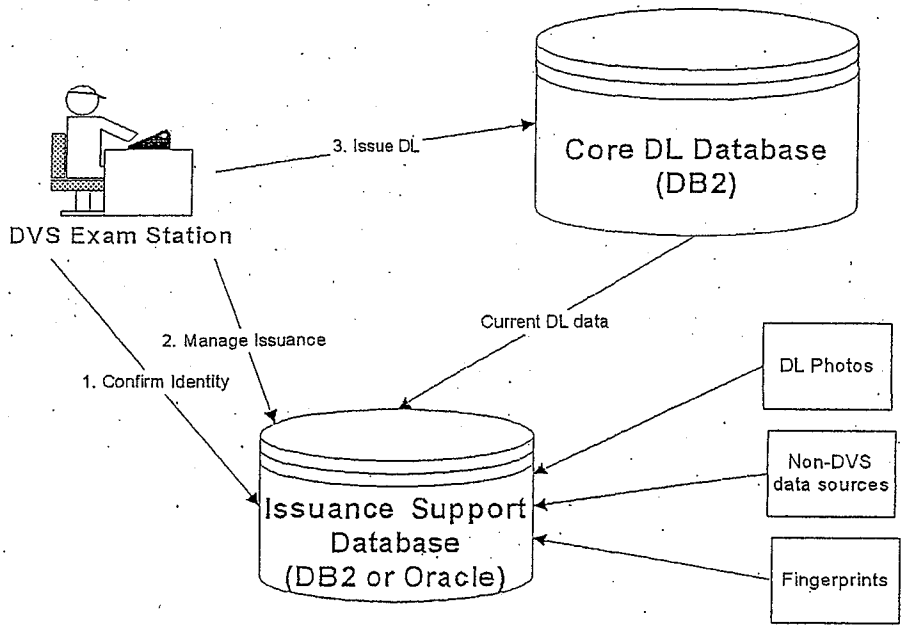



Figure 6. Issuance Environment Conceptual Model

## Estimated Project Length

The Reduction of Issuance Project would require a significant effort on the part of DVS. It is estimated that at least a 24-month period would be required to complete the project. Depending on the feasibility of implementing the new system across many locations with likely limited resources, DVS may choose to lengthen the time period for full deployment. The project length is also dependent on the need to develop custom programs versus the ability to deploy Commercial-Off-The-Shelf (COTS) solutions, especially with the workflow components. Finally, if change management and significant training difficulties take place, the project length will increase.

## Estimated Cost

Estimated costs for this project are summarized below. Actual costs will be dependent on a number of factors, including ability to acquire COTS software, feasibility of overlap with the Driver Compliance Improvement Project, leverage of Polaroid support, and potential difficulties with management of the changed issuance environment.

| Activity | DVS Cost |
|---|---|
| Analysis of "As Is" Current Environment | $157,500 |
| Develop Conceptual Vision | $28,500 |
| System Requirements and Design | $1,098,000 |
| System Development, Pilot, and Full Implementation | $657,000 |
| Project Manager | $180,000 |
| **Total** | **$2,121,000** |

Assumptions used for cost estimates include:

- In-house business staff, labor & fringe = $90K/yr/FTE * 1.5 = $135K/yr/FTE (1.5 to factor in overtime/backfill for in-house staff)
- In-house IT staff, labor & fringe = $90K/yr/FTE * 1.5 = $135K/yr/FTE (1.5 to factor in overtime/backfill for in-house staff)
- Consulting vendor staff = $240K/yr ($150/hr * 130 hr/month)
- Contracted project manager = $120K/yr/FTE (18 months support charged to project)

## Key Considerations

There are a number of considerations that need to be documented and potentially addressed for implementation of an improved Issuance processing environment, including:

- Process
  - Focus on issuing processes with potential to have greatest impact at reducing the ability to obtain fraudulent licenses
  - Research best practices in other states and licensing agencies
- Technical
  - Development of interfaces between DVS and non-DVS entities to support issuing database (e.g., federal agencies)

  - Ability of DVS to support large-scale OLTP (On-line Transaction Processing) application in-house
  - Integration of traditional and non-traditional technology devices, e.g. Internet, wireless devices, etc.
- Organizational
  - Change management
  - Potential redesign of business units and position responsibilities
  - Marketing to citizens and business partners
- Legislative/Political
  - Some policies may need to change to enable the redesigned environment

## Recommended Project: Database Migration/Redesign Project

This project would encompass the migration and redesign of the existing core DL database from a proprietary, non-relational database environment to a high performance, flexible, relational database environment. Specifically, DVS would migrate/redesign the database layer only, out of Supra and into a new database that would serve as a "container" system for the existing database schema. With this database layer migration/redesign, existing COBOL programs would have to be modified to access the new database, but would still use existing business logic. Existing interfaces would also have to be updated to point to the new database. The overall goal is to move the current environment out of Supra, while leaving other systems generally "as is." It will incorporate a minimal number of changes to the supporting applications and underlying data structure to lessen the operational impact of the migration and limit project risk. However, there may be opportunities to perform more significant database redesign in support of the new applications developed as part of the Driver Compliance and Reduction of Issuance Fraud projects.

| Database Migration/Redesign Project |
|---|
| **Supports Stated Objectives** |
| Provide information to external partners on a 24-hour, 7-day-per-week basis |
| Allow for seamless integration with other DVS and external information systems |
| Provide automated data verification to ensure that DVS maintains data that is accurate and reliable |
| Allow access to all DL and related data from any Exam Station, Central Office unit and by staff working in the field |
| Provide business partners with the most up-to-date, accurate driver data possible |
| Improve the ability of DVS management to plan and budget for the DL Program by providing better data |
| **Addresses Current Issues** |
| DL Data Provides Limited Support for Law Enforcement Purposes |
| DVS Cannot Effectively Track Fraud Within the System |
| Supra Database Platform Limits Program Support |
| External Business Partners Must Continue to Reliably Access DL Information |
| COBOL on Supra Is Not a Long-Term Viable Platform |
| Accuracy and Completeness of Data Is a Technical As Well As a Process Issue |
| E-Government Efficiencies and Expectations are Driving Change |

As the foundation of the current technical environment, the implications and limitations of the current database environment are far-reaching. The factors driving this initiative include:

- The current database, Supra, is based on older, non-relational database technology and is increasingly inflexible, making it difficult to adapt for new and improved application functionality.
- The physical limitation of the current database environment restricts the ability of DVS and OTSS developers to implement legislative mandates.
- Supra cannot use full ANSI (American National Standards Institute) SQL or modern business intelligence tools for ad hoc queries.
- Cincom (developer of Supra) is not recognized as a major database product vendor, and its product direction is unclear; the big four database vendors (IBM, Oracle, Microsoft, and Sybase) all have relational databases.
- Supra database support resources are difficult to find, hire, and retain, and consultant expertise is difficult to find.

- Independent software vendor (3rd party products) and integration tools (middleware, API's, adapters) are scarce, and none of the major middleware vendors support Supra; this lack of database connection tools makes integration with other applications more difficult, such as CriMNet.

An important component of this project is the current integration of the DL and MV systems and databases. All migration and redesign activities must ensure that DL/MV integration remains in place in any revised programs or data structures.

### Benefits

Benefits arising from this Database Migration/Redesign Project include:

- Leverage of power of relational database and modern software development technologies to take advantage of query tools, ODBC/JDBC tools, and ANSI SQL.
- Improved ability to hire and retain database support staff.
- Improved vendor support as leading database vendors have more resources and are more likely to survive long-term.
- Ability to take advantage of independent software vendor tools and products, as virtually all are clustered around the leading database products, including the types of integration and middleware tools that are intended to be used for CriMNet.
- Ability to take advantage of readily available consultant resources for special projects, as consultant firms with experience in leading database tools are relatively easy to find and competitive.
- Leverage of current hardware investments as at least one leading database product (IBM DB2) runs on the existing hardware platform.

## Database and Hosting Alternatives

DVS has different database and hosting alternatives to analyze as it considers this project. Given the mission-critical, high performance, 24/7 environment that is needed to support the criminal justice community, Gartner recommends that DVS consider either IBM DB2 or Oracle as the database product to support its future environment. Other industry-strength relational database products have either limited market presence (Informix, Sybase) or limited scalability (Microsoft SQL Server).

DB2 or Oracle would be a solid future technology decision. Another strategic decision DVS must consider is whether to continue to host the database at Intertech or to bring the system in-house. An analysis of available alternatives is provided in the table below.

| Database Location | Supra Intertech | DB2 Intertech | DB2 DPS | Oracle DPS |
|---|---|---|---|---|
| Initial Cost | $0 | Tbd | Tbd | Tbd |
| Maintenance Cost | Tbd | Tbd | Tbd | Tbd |
| Complexity & Staffing Requirements | Not overly complex; current Intertech and DVS/OTSS staff is providing necessary support | Complex; Intertech has staff to provide database backup and optional DBA support; DVS/OTSS would optionally need to provide limited DBA support | Complex; DVS/OTSS would need to maintain full-time 24-hour DBA support staff | Complex; DVS/OTSS would need to maintain full-time 24-hour DBA support staff |
| Training Requirements | No additional training necessary | Training in relational database constructs, DBA for DB2 (optional) | Training in relational database constructs, DBA for DB2 | Training in relational database constructs, DBA for Oracle |
| Other Issues/Risks | Inflexibility, unclear product direction, no alternative resource options, minimal ISV and integration tools | DBA supplied by Intertech would increase costs, potentially hamper coordination of changes | Little current familiarity with DB2; limited ability of DB2 to operate within non-IBM mainframe and Unix platforms; need for 24 hour system and database support, backup and recovery procedures, etc. | Little current familiarity with Oracle; no leverage of Intertech knowledge of DB2; need for 24 hour system and database support, backup and recovery procedures, etc. |

*DB2 at Intertech (recommended)* – It is recommended that DVS utilize DB2 in the Intertech mainframe environment as the target database to reduce risk. Migrating to a new database platform is a significant undertaking alone, and would be far more risky if a new hardware platform or a currently unsupported database environment is chosen. Intertech has supported DB2 production systems since 1995 and has the experience to provide basic operations as well as full database administration, at least until DVS staff can acquire sufficient DBA skills.

## Deployment Timeframe Alternatives

Concurrent with database and hosting alternatives, the timeframes of the Database Migration/Redesign Project must be considered. Viable options have a dependency relationship with the full redesign of the system – see information related to that System Redesign Initiative described next in this section. Three database migration/redesign options are analyzed:

- *Do not perform separate database migration/redesign* – This alternative would promote the continuation of Supra at Intertech to provide core DL database support until such time as a fully redesigned system and database can be implemented. This would eliminate the activities and related costs and resource requirements necessary to complete the Database Migration/Redesign Project. However, the significant benefits of deployment of an industry-standard relational database would be delayed until the more complex, lengthy system

redesign effort can take place. As detailed above, most of the benefits from database change are realized simply with the implementation of a modern, relational database product, even without a structural system redesign.

*Perform overlapping database migration/redesign and system redesign* – This alternative would begin the process of database migration/redesign, but before its completion, initiate the longer-term system redesign initiative. This shortens the total timeframe necessary for both efforts, allowing DVS to achieve the full benefits of a fully redesigned DL system at an earlier date. To perform these activities in an overlapping manner, DVS would need significant additions in resources that may be difficult to obtain. Additionally, the database migration/redesign effort would see increased project risk once the system redesign effort commences as resources and focus are split among the two initiatives.

*Complete database migration/redesign before commencing system redesign* ***(recommended)*** – This alternative would complete the Database Migration/Redesign Project before shifting focus and resources to the System Redesign Initiative. This option would lengthen the timeframe needed to accomplish the combined effort, resulting in the latest implementation of a fully redesigned DL system as compared with the other alternatives. However, Gartner recommends this as the preferred option, in that this would provide the quickest, least risky method in which to migrate the database to a modern, relational environment, providing significant benefits to DVS in the short-term. Also, DVS remains less constrained in the short-term to proceed with the first two recommended projects as well as any additional efforts that will provide quick, incremental benefits. Finally, decisions made concerning the architectural and database design for the first two recommended projects may influence, or even serve as the basis of, the System Redesign Initiative

## Recommended Implementation Approach

The following implementation approach to the database migration/redesign is recommended:

### *Analysis of Existing Database and Programs*

DVS would first perform detailed analysis of existing database and application programs running on Supra.

Deliverables

- Evaluation of the application architecture and function points
- Evaluation of the database schema supporting each application (types of data, number of rows, indexes, relationships, etc.)
- Definition of the data definition language constraints and/or application business rules
- Definition of all database and application interfaces using the existing data

Estimated Personnel/Timeframe/Costs

- DVS/OTSS Technical Staff: 3 staff for 3 months at 40% time ($40.5K)

*Program Conversion*

Next, DVS would convert the programs from Supra calls to SQL calls.

Deliverables

- Converted programs

Estimated Personnel/Timeframe/Costs

- DVS/OTSS Technical Staff: 2 staff for 6 months at 40% time ($54K)
- Contractor Staff: 1 consultant for 6 months, $300/program (500 programs) ($150K)

*Data Conversion*

Next, DVS would develop the database conversion programs and perform data conversion.

Deliverables

- Data conversion programs
- Converted data

Estimated Personnel/Timeframe/Costs

- DVS/OTSS Technical Staff: 3 staff for 6 months at 100% time ($202.5K) for database and program analysis, design, and programming changes
- Intertech Staff: no charge to develop conversion programs or run data conversion

*Conversion Testing/Implementation*

Finally, DVS would ensure that the converted programs/data work correctly. Upon completion of conversion testing, the transition to the migrated data and programs would be performed.

Deliverables

- Conversion Test Plan
- Test Results
- Transition Plan

Personnel/Timeframe/Costs

- DVS Business Staff: 2 staff for 6 months at 40% time ($54K)
- DVS/OTSS Technical Staff: 3 staff for 6 months at 100% time ($202.5K)

## Recommended Technology Feature Sets

The technologies utilized for this initiative should include the following features:

*Robust hardware platform* – A proven, high availability, high performance, and scalable hardware platform is recommended. Existing mainframe servers at Intertech fill this role for the database tier, as they are reliable and scalable.

*Robust system software platform* – A proven, reliable, and scalable system software platform is also recommended. The current mainframe server operating system satisfies this need at database tier.

## Estimated Project Length

In general, DVS should assume an approximate 18-month timeframe for this project. Some tasks can be paralleled, such as the development of programs for program conversion and data conversion. Also, these timeframes have been estimated based on limited changes in system functionality. The redesign of the system in subsequent phases provides the opportunity to implement new features and significant changes in scope. Including any significant number of functional changes will increase the project length as well as cost.

## Estimated Cost

Costs for this project are summarized below, with some of the figures estimated by Intertech. Intertech has agreed to cover the costs of data conversion program development and data conversion execution, including DBA and computer time for migration activities. Additionally, Intertech has committed to provide DB2 training classes to DVS/OTSS application and database staff. Additional time and costs will be incurred to ensure that the integration of select DL and MV data files and applications continues.

| Activity | DVS Cost |
|---|---|
| Analysis of Existing Database and Programs | $40,500 |
| Program Conversion | $204,000 |
| Data Conversion | $202,500 |
| Conversion Testing/Implementation | $256,500 |
| **Total** | **$703,500** |

Assumptions used for cost estimates include:

» In-house business staff, labor & fringe = $90K/yr/FTE * 1.5 = $135K/yr/FTE (1.5 to factor in overtime/backfill for in-house staff)

» In-house IT staff, labor & fringe = $90K/yr/FTE * 1.5 = $135K/yr/FTE (1.5 to factor in overtime/backfill for in-house staff)

## Key Risks/Considerations

There are a variety of risk and considerations that need to be documented and potentially addressed for database migration/redesign success, including:

- Architecture
  - Database "fit" with industry, State, agency patterns
  - Other concurrent State initiatives and approaches, such as CriMNet
- Interfaces
  - Number of existing interfaces and ability to work with external agencies to develop updated programs
- Operational
  - Impact of transition on existing systems

## Recommended Project: System Redesign Initiative

This initiative incorporates the full redesign of the DL system which is currently the main storage of DL-related information and is directly accessed to provide 24x7 inquiry by the criminal justice community. It would include a final redesign of the DL database schema, as well as the modification or replacement of the wide variety of DVS and non-DVS applications and interfaces that currently access core DL data.

| System Redesign Initiative |
|---|
| **Supports Stated Objectives** |
| Provide information to external partners on a 24-hour, 7-day-per-week basis |
| Allow for seamless integration with other DVS and external information systems, especially those related to problem drivers |
| Provide business partners with the most up-to-date, accurate driver data possible |
| Provide all Exam Stations with the ability to retrieve and view driver records on-line |
| Provide automated data verification to ensure that DVS maintains data that is accurate and reliable |
| Improve the ability of DVS management to plan and budget for the DL Program by providing better data |
| **Addresses Current Issues** |
| DL Data Provides Limited Support for Law Enforcement Purposes |
| DVS Cannot Effectively Track Fraud Within the System |
| External Business Partners Must Continue to Reliably Access DL Information |
| COBOL on Supra Is Not a Long-Term Viable Platform |
| Accuracy and Completeness of Data Is a Technical As Well As a Process Issue |
| E-Government Efficiencies and Expectations are Driving Change |

Unlike the previous three recommendations that are positioned as near-term, self-contained projects, the system redesign effort is best defined as a medium to long-term "Initiative." There are a variety of reasons for not defining this initiative as a near-term project, including:

- There is potential for new databases developed during the Driver Compliance Improvement Project, the Reduction of Issuance Fraud Project, and potentially other projects to become the basis for a new DL database and the eventual supplier of core information to CriMNet and other data users. This may eliminate the need to wholly redesign the current system's schema, applications, and interfaces.
- A full system (database and application) redesign would be too imposing on DVS/OTSS staff burdened with the need to learn a new database environment as well as support other projects recommended here and currently underway or planned by DVS and DPS.
- The technical directions defined for a full system redesign will likely depend upon the architectural design decisions of new applications such as the recommended Driver Compliance Improvement Project and the Reduction of Issuance Fraud Project.
- Changes to the DL system would have to be well integrated with potential MV database efforts, requiring significant planning and coordination of parallel redesign efforts.

### Benefits

As the other three recommended projects may fit within the ultimate system redesign, DVS will witness many of the benefits already documented in those other projects. Additional benefits arising specifically from the System Redesign Initiative include:

- Significantly improved ability for the database to share and act upon data from a program perspective; for example, link vehicle impound and forfeiture actions to the DL database, and support the sharing of Commercial Driver License data with other states.
- Full leverage of power of relational database and modern software development technologies to take advantage of query tools, ODBC/JDBC tools, and ANSI SQL.
- Ability to take advantage of the flexibility of a fully relational model to facilitate system changes in response to legislative mandates, management requests, and customer needs.

### Recommended Implementation Approach

A detailed implementation approach, with deliverables, estimated personnel, timeframes, and costs is impractical to recommend at this stage due to the uncertainty of the overall project scope of the System Redesign Initiative. Newly defined architectures, leverage of other databases as core DL data providers, and CriMNet requirements are some future topics that will impact the recommended approach. However, the high-level implementation methodology described in the Database Migration/Redesign Project, including analysis of existing programs and data, program conversion, data conversion, and conversion testing, can also be utilized for the remaining programs and data that needs to be converted during this initiative.

## Recommended Technology Feature Sets

The technologies utilized in a fully redesigned database and application environment resulting from this initiative should include the following features:

*Robust hardware platform* – A proven, high availability, high performance, and scalable hardware platform is recommended. Existing mainframe servers at Intertech fill this role for the database tier as they are reliable and scalable. Middle tier application and web servers should also be reliable and scalable.

*Robust system software platform* – A proven, reliable, and scalable system software platform is also recommended. The current mainframe server operating system can satisfy this need at database tier. A robust, proven application server platform can fill the need at the middle tier.

*Network-centric model* – DVS should consider a network-centric deployment model that features thin clients (browsers) and leverages the use of the statewide wide area network.

*Flexible development tools* – DVS should utilize flexible, extensible, mainstream component-based development tools and products. It is important to adopt a concept of code reuse, not necessarily object-orientation, to support "n-tier" style development and separation of the business rules layer. Finally, middleware and message-based integration (XML) should be employed.

*Robust implementation methods* – DVS should incorporate robust software engineering and project implementation methods based on industry "best practices."

Placing these recommended feature sets into an IBM architectural model would result in an "n-tier" architecture, featuring a DB2 relational database tier, an application server middle tier(s), and a thin client (browser) tier. Also, it should include a component-based development

paradigm and Java for next generation applications (e.g., IBM VisualAge and Websphere). In this environment, programmers could begin with Java server pages, servlets and Java beans, and then move toward full EJB (Enterprise Java Bean) and OO/AD (Object Oriented/Application Development) models over time as needs dictate.

### Estimated Project Length

It is difficult to estimate the project length of this initiative, given its dependencies with, and potential leverage of, other projects and efforts. Depending on its ability to leverage newly implemented projects, technology architectures, and database components, DVS could expect a 3-4 year horizon to realize the completion of a redesigned core database and application environment. As stated in the Database Migration/Redesign Project, it is recommended that system redesign should not begin until the database migration/redesign is largely completed.

### Estimated Cost

Given the unknowns already stated, it is perhaps most difficult to develop a sound cost estimate for the System Redesign Initiative. A sizable development and implementation effort might include 6 vendors and 6 in-house staff, plus additional software licensing and training costs. Costs for such an endeavor would be approximately $2.5M/year. Given the estimated 3-4 year horizon, total initiative costs could range anywhere from $7.5M to $10M. Overall costs for this initiative will trend lower than this cost estimate if the redesign effort leverages the results of the other recommended projects.

### Key Risks/Considerations

There are a variety of risk and considerations that need to be documented and potentially addressed for system migration success, including:

- Architecture
  - Technical and application "fit" with industry, state, and agency patterns
- Interfaces
  - Number of existing interfaces and ability to work with external agencies to develop updated programs
- Operational
  - Impact of redesign on existing systems, especially the MV database and applications
- Organizational
  - Process change, governance, change management

## Implementation Roadmap

This Feasibility Study Report has recommended that DVS implement multiple projects in order to resolve its business problems and meet many of its DS Program objectives. The recommended projects are wide-ranging in terms of time and cost, and certain components of each project have already been planned, initiated, and/or deployed.

An implementation roadmap is a planning tool that summarizes the multiple projects and various timeframes involved. The roadmap provides project management with a high-level overview of project timeframes and dependencies among projects, as presented in the figure below.

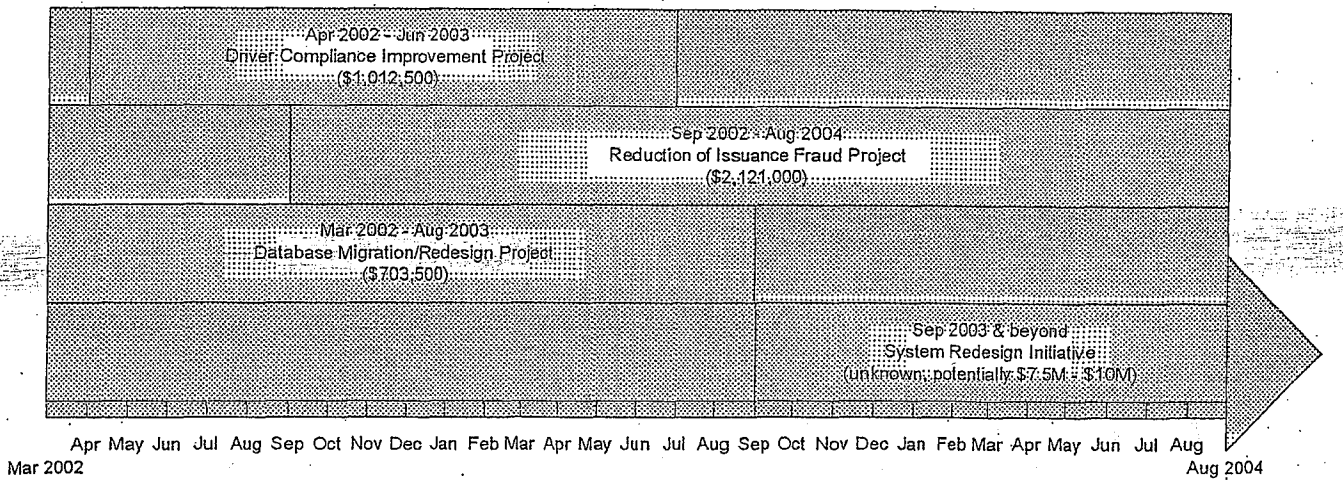



Figure 7. Implementation Roadmap

The estimated project timelines and recommended resources detailed in the project descriptions have been defined in order to allow for DVS to conduct multiple projects while continuing to support the daily business and technical needs of the organization. This includes:

- Utilization of contractor support for many technical functions
- Acquisition of an experienced project manager to coordinate and lead project activities
- The Driver Compliance Improvement Project, which provides immediate, direct benefit to dealing with problem drivers, is placed early within the implementation roadmap
- Initial migration of the database technology to provide early system benefits and the knowledge and experience of relational database technology, while avoiding the significant risk of initiating a full database technology and structural redesign.

The actual implementation timeframes will be dependent upon a number of factors, including the availability of vendors and contractors to support the efforts, length of time to procure products and services, and need for internal agreement regarding project scope and specific requirements.

# Risk Analysis

This section of the Feasibility Study Report presents the results of the risk analysis conducted for the project. It includes a complete description of the types of risks identified, risk categories, risk events, and mitigation strategies. The risk analysis presented here will serve as the basis for risk management throughout the later phases of the project.

## Project Risks

Project risk is any factor that may potentially interfere with successful completion of the project. A risk is not a problem – a problem has already occurred, while a risk is the recognition that a problem might occur. By recognizing potential problems, the project manager can attempt to avoid a problem through proper actions.

Project risks should be identified and carefully managed throughout the life of the project. It is particularly important in the early planning stages to document risks and identify preventative measures that have been applied to the risks. As the project progresses, project management and members of the project team should identify new risks to be managed. Also during the project, risks identified earlier may be removed.

Risks to both the internal and external aspects of the project should be tracked. Internal risks are those items the project team can directly control (e.g., staffing), and external risks are those events that happen outside the direct influence of the project team (e.g., legislative action). Risk categories identified for this project include:

- Strategic Risk
- Financial Risk
- Technical Risk
- Operational Risk
- Change Management Risk
- Project Management Risk

Within these categories, Gartner has identified risk events for the project. They are based on both standard industry risks for project efforts of this size and scope, as well as specific issues related to the unique DVS, DPS, and Minnesota environment. It is important that risk identification, management, and resolution continue throughout the life of the project. New risks are developed as the project matures and when external and internal situations change.

For each risk event, the following information is provided in the tables on the following pages:

- Mitigation Strategy – documents the preventative and contingency measures performed or planned that could minimize the effect of the risk event
- Impact – assesses the expected impact if the risk event occurs, ranging from A (high impact) to D (low impact)
- Probability – quantifies the chance of the event taking place
- Overall Risk Score – represents the estimated risk for this event, and is calculated by multiplying the Impact (A=100, B=75, C=50, D=25) and the Probability

## Project Risks by Overall Risk Score

| Risk Category | Risk Event | Mitigation Strategy | Impact | Probability | Overall Risk Score |
|---|---|---|---|---|---|
| Strategic | Some legislation may need to be initiated to enable the redesigned environment | DVS will work with leaders across its organization to plan for, communicate, and promote any necessary legislative changes | A | 80% | 80 |
| Technical | Migration of DL database and applications may impact current integration with MV database | Any future database schemas and solutions will maintain, if not improve upon, current DL/MV data integration | A | 70% | 70 |
| Change Management | Business process improvement may lead to potential redesign of business units and position responsibilities | Business process improvement projects will incorporate operational analysis and change management techniques to support successful change | A | 70% | 70 |
| Financial | Interfaces between DVS and non-DVS entities may be impacted by business and technology changes | Include external business partners early in the analysis and design processes and communicate continually | A | 65% | 65 |
| Operational | Adding connectivity may bring about significant operational changes to utilization of staff and physical resources | Business process improvement projects will incorporate operational analysis and change management techniques to support successful change | A | 65% | 65 |
| Financial | Project software, hardware, and services may have hidden costs for maintenance, warranties, licenses, etc. | Work with procurement, technical, and budgetary staff to ensure all hidden costs are identified before commitment of funds | B | 75% | 56.25 |
| Strategic | DVS directions as a result of this project may not meet the needs or expectations of DL information users | A broad cross-section of DVS, DPS, and external partners provided input into issue identification and future needs; an e-Government strategic plan has been included as part of the recommended projects | A | 50% | 50 |
| Operational | Impact of transition on existing systems is difficult to manage | Solutions will follow a phased approach where applicable to minimize the impact of deployment at any given time | A | 50% | 50 |
| Technical | Connectivity through the Internet may be unreliable | Recommended technology feature sets promote direct connectivity for improved control of network performance | B | 60% | 45 |

| Risk Category | Risk Event | Mitigation Strategy | Impact | Probability | Overall Risk Score |
|---|---|---|---|---|---|
| Change Management | The implemented solutions may require an extensive amount of user training to be effective | Consider establishing a change management team to provide information and assistance in preparing for changes resulting from the project; Create formal training plans and reference cards for end users | B | 55% | 41.25 |
| Operational | DVS may be unprepared to provide network-wide maintenance, central help desk support, and field support necessary for field operations online applications | Ensure that all changed processes and technologies are sufficiently supported when deployed | A | 40% | 40 |
| Project Management | Project success may be difficult to achieve due to inexperienced, uncoordinated project management | Recommended solutions include provision for a full-time project manager to oversee and coordinate all projects | A | 40% | 40 |
| Financial | So many processes provide opportunities for improvement that it will cost too much to change | Focus on processes with potential to have greatest return on investment | B | 50% | 37.5 |
| Operational | DVS and OTSS technical staff may not have the necessary skills or experience to support the new target environment | Hire outside resources to support initial efforts such as database replacement; partner target DVS/OTSS staff with knowledgeable outside resources; develop support personnel training/knowledge transfer plans | B | 50% | 37.5 |
| Project Management | Project may be scrutinized by management, other agencies and the public because of its cost or profile | Conduct outreach and education efforts to those entities that may be impacted by the project; DVS will keep internal management informed of project progress, activities, plans and issues | C | 75% | 37.5 |
| Technical | Existing technical systems may not be able to support the redesigned business processing environment | Initiative solutions to provide a flexible database, increased connectivity, and e-Government services will support process improvement activities | A | 35% | 35 |
| Change Management | New applications to business partners and the public will not be utilized | Focus groups, surveys, interviews, etc. will be used to ensure that new applications are wanted; Marketing to citizens and business partners will be performed | A | 35% | 35 |
| Change Management | Current DVS staff may not have the ability/desire to use a computer to perform business tasks | DVS staff will be trained in new applications and processes as required | A | 35% | 35 |
| Change Management | Current non-DVS staff may not have the ability/desire to use a computer | Non-DVS staff will be trained in new applications and processes as required | B | 35% | 26.25 |

| Risk Category | Risk Event | Mitigation Strategy | Impact | Probability | Overall Risk Score |
|---|---|---|---|---|---|
| | to perform business tasks | | | | |
| Operational | Project business staff may not have necessary knowledge of business requirements and their impact on the enterprise organization | Establish a core team of knowledgeable staff who can share information and teach others to ensure that business staff have enterprise view of their program and activities | A | 25% | 25 |
| Financial | Applying technology to existing inefficient processes will not provide needed benefits | Research best practices in other states and licensing agencies for conceptual vision and development of new processes | B | 30% | 22.5 |
| Technical | Technical solution may not follow general industry trends leading to difficulty in support and upgrade | Recommended solutions are built upon industry-leading products and proven technical environments | A | 20% | 20 |
| Technical | Using the Internet and related technologies for DVS and external partner access to DL information may compromise the security and confidentiality of the data | Work with DPS, Intertech, and contracted vendor information security staff and management to ensure project solutions meet security and information disclosure requirements | A | 20% | 20 |
| Strategic | Unanticipated changes in legislative or state e-Government policies may impact project implementation | DVS will ensure that communication with project sponsors and project stakeholders that follow potential legislative or standards changes is active | B | 25% | 18.75 |
| Change Management | Implemented solutions may not be operated effectively by DVS or non-DVS staff because they lack adequate knowledge about the software and hardware or resist change | Keep user staff informed of the purpose, benefits, and status of the project, prepare manuals and conduct formal training on the proper use of the system | B | 25% | 18.75 |
| Technical | Technical solution may differ from State of Minnesota initiatives and approaches | Study included interviews with State Architect, Intertech data center representatives, and internal IT staff to understand current and planned IT directions | C | 35% | 17.5 |
| Project Management | Project activities may be delayed due to ineffective participation by resources outside DVS control | Clearly define, communicate, and ensure understanding of roles and responsibilities to staff outside control of the project | C | 30% | 15 |
| Technical | Technical solution may differ from DVS initiatives and approaches | Recommended technology feature sets are consistent with most current DVS technology directions | C | 20% | 10 |

## Project Risks by Overall Risk Score within Category

| Risk Category | Risk Event | Mitigation Strategy | Impact | Probability | Overall Risk Score |
|---|---|---|---|---|---|
| Strategic | Some legislation may need to be initiated to enable the redesigned environment | DVS will work with leaders across its organization to plan for, communicate, and promote any necessary legislative changes | A | 80% | 80 |
| | DVS directions as a result of this project may not meet the needs or expectations of DL information users | A broad cross-section of DVS, DPS, and external partners provided input into issue identification and future needs; an e-Government strategic plan has been included as part of the recommended projects | A | 50% | 50 |
| | Unanticipated changes in legislative or state e-Government policies may impact project implementation | DVS will ensure that communication with project sponsors and project stakeholders that follow potential legislative or standards changes is active | B | 25% | 18.75 |
| Financial | Interfaces between DVS and non-DVS entities may be impacted by business and technology changes | Include external business partners early in the analysis and design processes and communicate continually | A | 65% | 65 |
| | Project software, hardware, and services may have hidden costs for maintenance, warranties, licenses, etc. | Work with procurement, technical, and budgetary staff to ensure all hidden costs are identified before commitment of funds | B | 75% | 56.25 |
| | So many processes provide opportunities for improvement that it will cost too much to change | Focus on processes with potential to have greatest return on investment | B | 50% | 37.5 |
| | Applying technology to existing inefficient processes will not provide needed benefits | Research best practices in other states and licensing agencies for conceptual vision and development of new processes | B | 30% | 22.5 |
| Technical | Migration of DL database and applications may impact current integration with MV database | Any future database schemas and solutions will maintain, if not improve upon, current DL/MV data integration | A | 70% | 70 |
| | Connectivity through the Internet may be unreliable | Recommended technology feature sets promote direct connectivity for improved control of network performance | B | 60% | 45 |
| | Existing technical systems may not be able to support the redesigned business processing environment | Initiative solutions to provide a flexible database, increased connectivity, and e-Government services will support process improvement activities | A | 35% | 35 |

| Risk Category | Risk Event | Mitigation Strategy | Impact | Probability | Overall Risk Score |
|---|---|---|---|---|---|
| | Technical solution may not follow general industry trends leading to difficulty in support and upgrade | Recommended solutions are built upon industry-leading products and proven technical environments | A | 20% | 20 |
| | Using the Internet and related technologies for DVS and external partner access to DL information may compromise the security and confidentiality of the data | Work with DPS, Intertech, and contracted vendor information security staff and management to ensure project solutions meet security and information disclosure requirements | A | 20% | 20 |
| | Technical solution may differ from State of Minnesota initiatives and approaches | Study included interviews with State Architect, Intertech data center representatives, and internal IT staff to understand current and planned IT directions | C | 35% | 17.5 |
| | Technical solution may differ from DVS initiatives and approaches | Recommended technology feature sets are consistent with most current DVS technology directions | C | 20% | 10 |
| Operational | Adding connectivity may bring about significant operational changes to utilization of staff and physical resources | Business process improvement projects will incorporate operational analysis and change management techniques to support successful change | A | 65% | 65 |
| | Impact of transition on existing systems is difficult to manage | Solutions will follow a phased approach where applicable to minimize the impact of deployment at any given time | A | 50% | 50 |
| | DVS may be unprepared to provide network-wide maintenance, central help desk support, and field support necessary for field operations online applications | Ensure that all changed processes and technologies are sufficiently supported when deployed | A | 40% | 40 |
| | DVS and OTSS technical staff may not have the necessary skills or experience to support the new target environment | Hire outside resources to support initial efforts such as database replacement; partner target DVS/OTSS staff with knowledgeable outside resources; develop support personnel training/knowledge transfer plans | B | 50% | 37.5 |
| | Project business staff may not have necessary knowledge of business requirements and their impact on the enterprise organization | Establish a core team of knowledgeable staff who can share information and teach others to ensure that business staff have enterprise view of their program and activities | A | 25% | 25 |

| Risk Category | Risk Event | Mitigation Strategy | Impact | Probability | Overall Risk Score |
|---|---|---|---|---|---|
| Change Management | Business process improvement may lead to potential redesign of business units and position responsibilities | Business process improvement projects will incorporate operational analysis and change management techniques to support successful change | A | 70% | 70 |
| | The implemented solutions may require an extensive amount of user training to be effective | Consider establishing a change management team to provide information and assistance in preparing for changes resulting from the project; Create formal training plans and reference cards for end users | B | 55% | 41.25 |
| | New applications to business partners and the public will not be utilized | Focus groups, surveys, interviews, etc. will be used to ensure that new applications are wanted; Marketing to citizens and business partners will be performed | A | 35% | 35 |
| | Current DVS staff may not have the ability/desire to use a computer to perform business tasks | DVS staff will be trained in new applications and processes as required | A | 35% | 35 |
| | Current non-DVS staff may not have the ability/desire to use a computer to perform business tasks | Non-DVS staff will be trained in new applications and processes as required | B | 35% | 26.25 |
| | Implemented solutions may not be operated effectively by DVS or non-DVS staff because they lack adequate knowledge about the software and hardware or resist change | Keep user staff informed of the purpose, benefits, and status of the project, prepare manuals and conduct formal training on the proper use of the system | B | 25% | 18.75 |
| Project Management | Project success may be difficult to achieve due to inexperienced, uncoordinated project management | Recommended solutions include provision for a full-time project manager to oversee and coordinate all projects | A | 40% | 40 |
| | Project may be scrutinized by management, other agencies and the public because of its cost or profile | Conduct outreach and education efforts to those entities that may be impacted by the project; DVS will keep internal management informed of project progress, activities, plans and issues | C | 75% | 37.5 |
| | Project activities may be delayed due to ineffective participation by resources outside DVS control | Clearly define, communicate, and ensure understanding of roles and responsibilities to staff outside control of the project | C | 30% | 15 |

## Risks of Not Proceeding

While the preceding discussion identified project risks to be managed, there are also risks related to not proceeding with the near-term recommended projects. These risks come largely from the business and technical problems and issues related to the current environment, as well as the opportunities for improvement, goals, and objectives of the project and the DS Program. Each risk identified below is related to a recommended project, and is applicable if that project is not undertaken.

### Driver Compliance Improvement Project

Risks related to not implementing the Driver Compliance Improvement Project include:

- Information in the DL database will not be up-to-date
- Law enforcement will continue to rely on non-current data to make important decisions
- Customer service will remain limited due to lack of information at the customer interface point
- DVS will not meet the expectations of external partners to utilize e-Government applications
- Inefficient paper flow between DVS and its external business partners will continue
- Error checking of data entered by external partners will continue to be performed in a non-timely batch environment, increasing the likelihood of incomplete or incorrect transactions

### Reduction of Issuance Fraud Project

Risks related to not implementing the Reduction of Issuance Fraud Project include:

- Information in the DL database will not be up-to-date
- Data used for law enforcement and other purposes will continue to be non-current due to inability to provide updates in real-time
- Paper processes that inhibit program effectiveness will continue
- Customer service will remain limited due to lack of access to current information
- Implementing new technologies without redesigning the underlying processes will not result in effective, efficient operations
- Expectations of DVS management and staff as well as external business partners will not be realized

### Database Migration/Redesign Project

Risks related to not implementing the Database Migration/Redesign Project include:

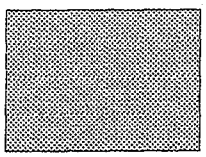
- Support of the current database will become more costly due to:
  - DPS being the sole user of Supra systems at Intertech
  - Scarcity of hiring new database support staff due to product age
  - Scarcity of available consultant resources for special projects

- Current inflexibility will remain that inhibits making changes due to legislation
- Ability to provide management and policy-related information will remain limited due to current lack of decision support tools
- Fraud tracking will remain ineffective due to lack of data mining tools
- Power of relational database technology and modern software development and query tools will not be realized
- Integration with CriMNet may be more difficult due to lack of modern middleware tools for the current database

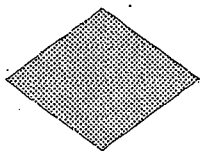
# Appendix A

The high-level process flow diagrams on the following pages were developed during focus group meetings with DVS staff as part of the data gathering project effort. Please see the Baseline Environment section of this report for narrative descriptions and further analysis of these processes.

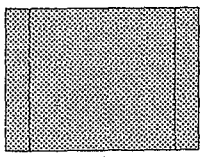
Process flow diagrams consist of process actors and activities. Process actors are listed on the left-hand side of the pages. The process flow diagrams consist of the following primary shapes:



Indicates a process activity

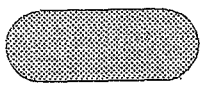


Indicates a decision point



Indicates a pre-defined sub-process

Indicates connection points to other process flow diagrams



Indicates terminator points in the process

Indicates flows between process activities

NHTSA – Federal Fiscal Year 2002 Transfer Funds Update.

The Transportation Operation Communication Centers (TOCC's) are primarily a rural deployment of communication infrastructure, enabling both enforcement and the prevention of all crashes including alcohol related incidents. Rural Minnesota is where a majority of fatal DWI crashes occur. The ability to respond in a timely manner is highly dependent on communication. The ability to coordinate responses from both MnDot and the State Patrol is especially critical in the rural areas.

The TOCC project will enable the troopers to have access the Drivers and Vehicle information systems that are critical in expediting the drunk driver and determining the level of charge. Providing officers with the necessary access to information and the tools to complete their work and return to the road for Patrol is of extreme importance to the overall enforcement and safety of all travelers in Minnesota.

The project is funded by several different federal and state resources. MnDot has provided approximately $17 million of the estimated $30 million needed to implement the entire TOCC program throughout the state. The 164 transfer funds have provided $600,000 in Federal Fiscal year ending September, 2002 and $3,422,053 in federal fiscal year 2003 ending September, 2003.

Specifically, the NHTSA transfer funds will be directed toward the following alcohol impaired countermeasures:

- Provide access to the Driver and Vehicle information system. This will expedite decisions about the level of DWI charge and ensure that all levels of the DWI laws are enforced.
- Enable a more comprehensive and automated approach to incident management and the reporting and tracking of violations.
- Support the future electronic submission of crash reports and violations. This will allow for more timely access to other enforcement agencies who query the driver and vehicle information system.
- Improve officer safety. Apprehending DWI offenders can be one of the most dangerous activate on the roadway for officers. The improved communication system supported by the TOCC project will provide information about officer location , allow real time identification of the driver at the scene and improve emergency dispatch ability.

The 164 Funds received in FFY2001 were used to improve the Department of Public Safety Drivers License system. The TOCC project builds on that effort and the access to the new system on a more statewide basis where the need is the greatest. It also compliments other existing projects, which are currently underway. The NightCAP program that focuses on impaired drivers through out the state by combining local, county and the State Patrol into one or two night saturations. These programs can be even more successful if better access to information in rural areas is provided to officers on the road. The benefit of having the additional DWI forms in their squad cars will also be possible using mobile data computers, which will be used to access the forms and the driver's license system. Technology has improved and the future automation of all reports, violations, crash information would not be possible with out the backbone or infrastructure improvements necessary in these rural corridors.

The TOCC deployment supported with these funds is in these areas:

- Marshall District / I90 corridor
- St. Cloud Area / 169 corridor
- Detroit Lakes / Hwy 10 corridor

The following list provides details about the type of equipment that will be purchased to support the deployment:

1. Microwaves - Radio equipment that is used to communicate from one tower to the next tower. The method of transmission is a digital signal.
2. Antennas – This is the radiating device for the microwave equipment. It also included the conductor, connectors, and mounting hardware to secure the equipment to the tower.
3. Power Supplies – This device converts household current into a voltage that the Microwave radios need to operate.
4. Channel Banks – This is the device that coverts audio signals into digital signals that the microwave radio is capable of transmitting.
5. Communication Tower – This is the tower pieces (steel). It does not include any funds for the assembly or construction of the tower. MnDot will cover the construction costs.
6. Tower Safety/Security - Costs include the fencing for the communication tower and the equipment enclosure.
7. Electrical Equipment - Includes the equipment enclosure for the Microwave, power supplies, and the Channel banks. Ensures the access of electrical power to the equipment enclosure.
8. Console – Includes the electronic equipment necessary for the operator to interface the radio system.
9. Base Station Equipment - Electrical equipment for base stations that receive the digital signals for the communication towers.
10. Line circuits - These circuits receive the transmissions at a central location. (Water's Edge)

The project is administered by the Department of Public Safety's Office of Traffic Safety through an interagency agreement with MnDot. Both agencies work together to ensure the project is completed in a timely manner. The following is an estimated project schedule:

- October - November 2002 – Interagency agreement executed with MnDot.
- December – September 2003 - Bidding and purchase of all equipment outlined in project.
- January – September 2003 – Installation of all major equipment.
- December 2003 - Final Report on Project and Financial Status.

The amount budgeted for State Fiscal Year 2003 (October, 2002 through June 2003) is $3,079,721 The amount budgeted for State Fiscal Year 2004 (July, 2003 through September 2003) is $ 342,332. The total amount of this portion of the TOCC project is $ 3,422,053