

DMV Case Study

Purpose of this Assignment

(The information below is excerpted from the Virginia Department of Motor Vehicles' RFP 154:7-061, *DMV CSI Systems Redesign Project*, available from under Content>Course Resources>DMV_CSI_RFP_083107_Final_Release. Corresponding page numbers from the RFP are given in parentheses at the end of each lettered section heading.)

A. DMV Organizational Overview (p. 2)

The Department of Motor Vehicles (DMV) is a governmental agency in the Executive Branch of Virginia state government. Under the direction of the Secretary of Transportation, DMV administers motor vehicle and tax related laws for the continued benefit of all citizens of the Commonwealth of Virginia. Specifically, DMV administers motor vehicle titling and licensing laws, driver's licensing laws, transportation safety laws, tax laws, and other motor vehicle-related laws and regulations as directed by the *Code of Virginia* and Federal laws, as amended.

DMV employs nearly 2000 full and part-time employees to meet its daily mission of providing transportation services to customers in Virginia. These employees provide services via one centralized administrative Headquarters located in Richmond, Virginia as well as 74 Customer Service Centers (CSC's) and 13 Motor Carrier Service Centers/Weigh Stations (MCSC's) dispersed throughout the state. In addition, some services are provided at more than 40 DMV Select offices located throughout the state. DMV Selects are a service alternative to visiting a full-service DMV Customer Service Center. Local governments and private entities contract with DMV to provide secure, select DMV transactions at convenient locations.

DMV provides a multitude of services to private citizens, transportation entities, courts, law enforcement agencies, government agencies, insurance companies, and related transportation clients. The most commonly provided DMV services include:

- Credentialing – This includes the provision of driver testing and licensing, vehicle titling and registration, credentialing of commercial motor carriers, and regulatory licensing functions such as fuel distributors, rental car companies, dealers, commercial driver training schools, driver improvement clinics, and 3rd party testers.
- Tax processing – This includes support for the calculation, collection, accounting, and reporting statistics for all tax filings (including IFTA, tax on fuel, and tax on motor vehicle rentals) as well as support for an external/taxpayer audit function.
- Oversight of related programs such as transportation safety and information management

Due to the nature of DMV business processes, the type of work performed by the agency requires substantial use of automated systems. It is imperative that the agency operate its programs and facilities in an efficient manner, incorporating into its operation those

technological developments and automated solutions that will enhance the delivery of services to DMV's various transportation clients.

B. The Opportunity (p. 1, pp. 2-3)

DMV has decided to undertake a systems redesign they are calling CSI:

- Customer-centric
- Service Oriented
- State-of-the-art
- Secure
- Intelligent
-CSI

The DMV CSI Systems Redesign project focuses on the fragmented processing of DMV's core business areas of credentialing, tax processing, and financial management. The purpose of the CSI effort is to transform these fragmented and outdated systems into one modernized system that is responsive to the ever-changing needs relating to internal security, homeland security, legislative mandates, and customer relationship management.

As we move forward with this endeavor, DMV has a unique opportunity to revolutionize the agency's approach to fulfilling its mission, carrying out core functions, and delivering service. DMV intends to fully integrate processing while incorporating and leveraging the full functionality and benefits of proposed technology solutions as well as the technology already in place.

The scope of the DMV CSI Systems Redesign project is based on utilizing a fully integrated system to serve and manage our customers, our contractual business partners, and our stakeholders. The scope includes, but is not limited to credentialing, tax processing, and financial management.

The CSI Redesign consists of the following components:

- User interfaces for Headquarters, Weigh Station, and Customer Service Center staff, DMV Selects, Internet, Touchtone, cyber sites, and selected business partners (online dealers, Commissioners of the Revenue, insurance companies, motor carrier companies, etc.)
- Core business services
- Infrastructure services to manage access rights, perform audit and system logging functions, a business rules engine, a message broker to facilitate communication between components and with external system interfaces, transaction suspense capability, and a correspondence module.
- Data stores, business intelligence to provide regular and ad hoc management reports, audit reports and fraud alerts, and other applications, and
- Interfaces to other systems, such as DMV's Purchasing, Inventory, and Payables System (PIPS), Department of Accounts (DOA), Treasury, Unified Carrier

Register (UCR) repository, Centralized Accident Processing System (CAP), Traffic Records Electronic Data System (TREDS) which will replace CAP, Hauling Permits, Virginia Criminal Information Network (VCIN), DMV's Human Resource system, etc.

C. The Current Environment (pp. 6-7)

1. Overview of Existing Customer Service Center (CSC) Environment

Each CSC has the capability to house its own hardware and software supporting the citizens of the Commonwealth utilizing server virtualization and operating system streaming to reduce the support costs associated with distributed systems.

The main technologies utilized are based on Ardenne Desktop Edition (www.ardence.com) to stream the Windows operating system to the desktops. VMWare ESX server is utilized to host virtual Windows 2003 based servers.

DMV CSCs are connected to the DMV HQ via T1 speed circuits. The HQ WAN connections are enhanced by the use of F5 WANjet appliances. DMV CSC's also have frame relay circuits connecting them to the Virginia Information Technologies Agency (VITA) data center for SNA Mainframe traffic only.

All servers in each branch must support being virtual servers. This allows DMV to centrally manage and deploy servers without having to procure or replace server hardware as systems are introduced, upgraded, or replaced. Servers can be deployed from the central DMV support system utilizing the existing DMV Virtual Server Farm. DMV has a pair of HP Proliant DL360s fiber connected to an HP MSA1000 SAN for Virtual Machines. All connections to the SAN are through the DL360s and Virtual Servers. The current storage capacity of the MSA1000 is approx 1TB of storage. Disk space can be provided via Windows 2003 Virtual Servers.

All workstations have the operating system streamed (OSS) via Ardenne Desktop Edition. This allows DMV to centrally manage and update one system image for all machines at the DMV CSCs. The internal hard disk on each workstation has been deactivated as the operating system is streamed but can be enabled if necessary. Also, Ardenne Desktop Edition provides a full Windows XP Pro Operating system, not an XP embedded or thin client OS. This allows any device with the proper drivers installed in the master image to work on the DMV OSS Workstations. DMV has deployed HP dc7600 slim line PC's for the OSS Workstations.

User authentication, authorization, file and print, and group policies are provided locally at each CSC via Virtual Windows 2003 Servers.

Each CSC presently has its own software to support the citizens of the Commonwealth for driver licensing and vehicle registration utilizing CSCNet (Customer Service Center Network) written in the Software AG language Natural, in a Unix environment.

2. **Overview of Existing DMV HQ Computing Environment**

At its Headquarters location, DMV operates a Novell v6.5 LAN.

Customer Service Center PC's connect to the HQ LAN via the WAN. DMV PC's operate in either a Windows 2000 or XP Pro SP2 environment.

Novell GroupWise v7.x is used for e-mail. Netware for SAA is used for 3270 emulation with the use of Powerterm to access CSS.

3. **Overview of Existing Citizen Services System (CSS)**

The CSS System is a mainframe application system running in the OS/390 environment at VITA. DMV's application programs are built using the Software AG products ADABAS, Natural, and COMPLETE. CSS is DMV's primary information system that is used for storing information on customers, their addresses, their driver history, vehicle registration and titling information, etc.

This system is accessed from the CSCs via a private Frame-Relay network, and from the DMV Headquarters location via a private DS3 serial connection. CSS is also accessible via the EAI layer described below via XML web services.

4. **Overview of Current DMV Enterprise Application Infrastructure (EAI)**

DMV's current EAI is a service-based architecture utilizing a variety of techniques. The preferred mechanism to interact to DMV's EAI is via web services. DMV provides high-availability services to the mainframe, databases, and a variety of other DMV systems.

Presently DMV utilizes Windows based servers as Presentation, Business Logic, and Data Access servers. DMV Servers are secured based on current industry standards provided by the NSA, SANS Institute, etc, as well as those published by VITA. Servers are designed with standardization across all machines. DMV utilizes both physical and virtual servers (VMWare ESX Server) based on need and activity.

Document and image management, storage, retrieval, and workflow services are provided by Hyland Systems OnBase application.

DMV's present enterprise database platform consists of a high-availability Oracle 10g RAC 2 node cluster and a SQL Server 2005 failover cluster both utilizing fibre channel storage.

The DMV Enterprise Application Infrastructure (DMV-EAI) is designed with security and standardization as the core set of principles required to provide maximum uptime to applications and customers.

DMV's present development environment for enterprise applications is based on the Microsoft .NET development platform (VB.NET and C#).

5. **Overview of Other Outlets**

DMV has several outlets that utilize a combination of technologies defined above. These outlets and systems provide core services to internal and external customers of DMV. They are highlighted below and are not all-inclusive of all outlets, yet provide the necessary sampling of technology implementation for reference purposes:

DMV Select: DMV Select allows selected business partners to provide core DMV services to the citizens of the Commonwealth. They utilize a smart client application to perform vehicle related transaction processing. Select offices utilize the public Internet over a secure channel to access the core services available on CSS. The access is provided by the EAI listed above to interact with CSS.

MCSC (Motor Carrier Service Center): The MCSC offices utilize a variety of applications to perform their daily activities. They have access to CSCNet as well as several intranet applications that interact with CSS via the EAI listed above. They utilize a combination of smart client, intranet web applications and Powerterm to access CSS via a 3270 client.

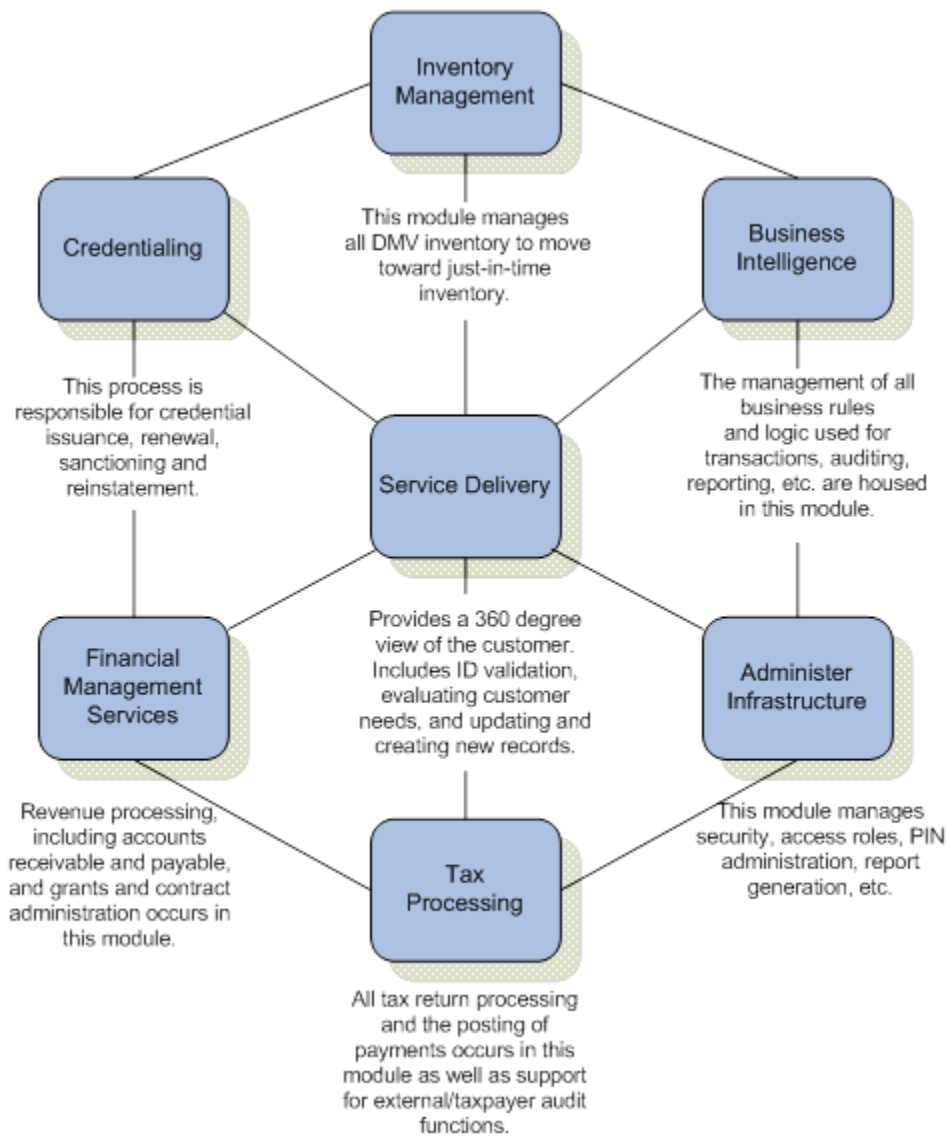
3rd Party Systems: DMV has several 3rd Party hosted systems that support various business functions. Examples include ACS, Digimarc, etc. These systems utilize various technology sets and platforms that interact with the core platforms identified above.

D. CSI Redesign Objectives (pp. 8-9)

1. Providing improved access to information through single sign-on and limiting access to data, fields and values, screens, system processes to only authorized users, improving user authentication, segmenting and tracking access based on user roles and responsibilities (role-based security model capabilities), and creating a new ability for users to generate ad hoc reports.
2. Enhancing security, customer ID verification, and fraud prevention by eliminating duplicate customer records and creating a true single customer record, tracking patterns of suspicious activity (customer and employee), producing automated exception reports and creating systems alerts to potential safety, security, and risk management issues, and restricting access based on user roles and responsibilities and accommodating multiple authentications based on segregation of duties.
3. Automating audit requirements and oversight by tracking user activity in a standard manner and creating a single data store.
4. Consolidating disparate applications by replacing multiple systems with a single integrated data store, integrating multiple applications through core modules (such as user interfaces, core business services, infrastructure related services, interfaces, etc.), and providing a financial services component, as well as a tax processing component, with enhanced tracking and netting capabilities.

5. Improving efficiencies by incorporating best practices and re-engineering all processes within the project scope (at a detailed level as part of developing a detailed system design during the detailed design forum).
6. Implementing a customer-centric model that effectively supports customer relationship management.
7. Increasing alternative service channel usage by allowing most transactions to be offered through multiple channels.
8. Migrating toward electronic credentials to provide the type of controlled access needed for authorized entities to verify the existence of electronic credentials, including photographic or other images as may be required.
9. Accommodating interoperability and integration with business partners by providing a consistent method to interface with business partners and a consistent message format for exchanging data as well as creating the ability to effectively manage business partner contracts and billing electronically.
10. Providing an integrated financial component, including integration of the agency's ERP (Oracle Financials), to facilitate a complete financial view of the customer (refunds due, additional fees due, etc.) as well as an enhanced ability to allocate revenues to appropriate accounts.

E. Future State Business Process Model (pp. 14-18)



Each of the seven process areas identified in the CSI Future State Business Process Model are described below, including the business functions supported by each as well as the products/services provided. Please note that these processes and business functions are not listed in priority order.

1. Service Delivery

Service delivery supports all DMV access channels to provide a 360-degree view of a DMV customer by collecting all relevant data. All customer (including business partners, stakeholders, etc.) and employee contact and activity must enter and exit through this process. Service Delivery will coordinate all support functions of the contact activity including the ability to support a shopping cart concept for multiple transactions, payment processing and netting, inventory processing, and release of the final product.

2. Credentialing

The credentialing process rolls the credentialing functions of driver, vehicle, motor carrier, and regulatory licensing functions such as fuel distributors, rental car companies, dealers, commercial driver training schools, driver improvement clinics, and 3rd party testers into one, all inclusive process. A credential can be issued, updated, or renewed, a privilege reinstated or taken away, and compliance to requirements is monitored. A credential would also include the creation of PINs, Use Agreements, and any other DMV product or service requiring formal authorization or approval.

3. Tax Processing

Tax Processing manages the processing of tax returns and posting the tax payment as well as taxpayer audit support functions.

4. Financial Management Services

Financial Management Services handles reconciliation and distribution of revenue of all payments from DMV transactions as well as grant and contract administration.

5. Inventory Management

Inventory Management tracks the consignment of controlled inventory and assets.

6. Business Intelligence

Business Intelligence will provide the ability for retrieving and reporting information on DMV data. There will be the ability to compile data in such a manner that will be meaningful to the end user (including decision makers at DMV, external entities, etc.). This will include key performance indicators such as customer wait time and cost per transaction. Once the data is presented, there will be a decision support tool to assist DMV managers so that various alternatives can be compared. BI will also support automated and ad hoc reports (e.g., enabled by Use Agreements) and assist in identifying fraud through periodic audits.

7. Administer Infrastructure

Administer Infrastructure will give DMV the necessary flexibility for business users to be able to change their workflow and business rules as needed. Additionally, DMV staff with the appropriate roles and permissions will be able to control system credentials, access, and data management roles such as PINs and Service Agreements. This module also supports the call center help desk and mail processing.

Reference

Commonwealth of Virginia. Department of Motor Vehicles. (2007, August 31). *DMV CSI systems redesign project*. Request for Proposal (RFP) 154:7-061. Originally retrieved from <http://www.dmv.state.va.us/csi/pdf/rfp.pdf>