

IJIS Institute

**TECHNOLOGY ASSISTANCE
REPORT**

**American Association of
Motor Vehicle Administrators**

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IJIS Institute Technology Assistance Team Members	Redha Morsli IJIS Institute TA Program Manager
	Joseph Mierwa VisionAIR
	Iveta Topalova Analysts International
	David N. Amble MTG Management Consultants

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U.S. Department of Justice
Office of Justice Programs
810 Seventh Street, NW.
Washington, DC 20531

Alberto R. Gonzales
Attorney General

Robert D. McCallum, Jr.
Associate Attorney General

Regina B. Schofield
Assistant Attorney General

Domingo S. Herraiz
Director, Bureau of Justice Assistance

Office of Justice Programs
World Wide Web Home Page
www.ojp.usdoj.gov

Bureau of Justice Assistance
World Wide Web Home Page
www.ojp.usdoj.gov/BJA

For grant and funding information contact
U.S. Department of Justice Response Center
1-800-421-6770

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The IJIS Institute appreciates the opportunity to have assisted the American Association of Motor Vehicle Administrators with their National Motor Vehicle Title Information System project. We are available for additional assistance and facilitation on any of the recommendations listed in this report.

Redha Morsli
TA Program Manager
IJIS Institute

1. Introduction and Request for Assistance

1.1 Technology Assistance Request

In early 2006, the American Association of Motor Vehicle Administrators (AAMVA) contacted the IJIS Institute and requested Technology Assistance (TA) to assess the architecture and technology of National Motor Vehicle Titling Information Systems. The scope of the TA engagement included an assessment of the central site operations as well as a review of how states implement the NMVTIS program.

In an effort to assess the central site operations, the IJIS Institute conducted meetings at the AAMVA offices located in Arlington, Virginia. The meetings consisted of a series of questions and answers and general documentation review sessions.

State implementations of the NMVTIS were assessed during a series of document reviews. The IJIS Institute TA team also conducted a site visit at the Virginia Department of Motor Vehicles in Richmond, Virginia to review the operational details of a state NMVTIS implementation.

The IJIS Institute, with the guidance of AAMVA, also performed a national survey to assess the NMVTIS state implementation process. The surveys also focused on identifying the challenges that states encountered during the NMVTIS implementation process. Results of the survey can be found in Appendix 2 of this report.

1.2 Technology Assistance Team

In order to implement and execute the TA project, the IJIS Institute solicited the assistance and participation of senior and qualified consultants from its member firms. The following individuals were selected by the IJIS Institute to participate in the TA project:

Redha Morsli
TA Program Manager
IJIS Institute
(202) 448-1718
redha.morsli@ijis.org
www.ijis.org

Joseph Mierwa
Senior Software Developer
VisionAIR
jjmierwa@visionair.com
www.visionair.com

David N. Amble
Manager
MTG Management Consultants
damble@mtgmc.com
www.mtgmc.com

Iveta Topalova
Practice Manager/Senior Architect
Analysts International
itopalova@analysts.com
www.analysts.com

2. General Program Information

The following section provides some historical information of the National Motor Vehicle Title Information System (NMVTIS). The section also provides a brief overview of the evolution of the program in the past decade.

2.1 Program Background

In 1992, Congress passed the Anti Car Theft Act as a response to motor vehicle theft. The Act was designed to reduce auto-theft by making the selling of stolen or damaged cars more difficult. Title II of the Act required the establishment of NMVTIS – an information system that allows jurisdictions to instantly and reliably verify the titling, theft, and damage history of a vehicle. The system also allows a titling agency to validate, document and retain any damage information associated with the vehicle prior to issuing a new title. The NMVTIS system was designed and developed by the American Association of Motor Vehicle Administrators (AAMVA)¹ leveraging the architecture and experience gained during the implementation of the Commercial Driver License Information System (CDLIS). AAMVA's role in the program is to provide the infrastructure and implementation support for NMVTIS.

NMVTIS makes it difficult for automobile thieves to obtain legitimate vehicle ownership documentation, and it gives consumers access to vehicle information. The Anti Car Theft Improvements Act of 1996 was signed into law on July 2, 1996. It amends the Anti Car Theft Act of 1992 to give the Department of Justice the responsibility for the information system.

The information collected in the NMVTIS system can be used by law enforcement agencies to investigate vehicle theft and document fraud. Law enforcement capabilities of NMVTIS include online theft inquiries, theft and fraud data analysis, and online theft notifications.²

Benefits of the NMVTIS program include increased road safety, enhanced customer service during the titling process, greater accuracy of state title files, and improved process efficiency by implementing a paperless process for transferring vehicle titles between states. The information in the system can also be extremely valuable to consumers in the process of shopping for a used vehicle.

2.2 Program Evolution from 1999 to 2006

A NMVTIS pilot project was performed from July 1999 to December 1999. Participants included Virginia, Indiana, Kentucky and Arizona, as well as the

¹ For more information regarding the American Association of Motor Vehicle Administrators refer to <http://www.aamva.org>

² The online theft inquiries, theft and fraud data analysis, and online theft notifications capabilities of NMVTIS are currently in the planning stages.

central file operators for the system - the National Insurance Crime Bureau (NICB) and the Polk Company. The pilot demonstrated that NMVTIS fulfills the Anti Car Theft Act requirements using a technically feasible approach. The pilot project also demonstrated that NMVTIS reduces fraud and deters titling of stolen vehicles. The pilot project also identified barriers for state participation in the NMVTIS program such as funding for state development and a lack of legal provisions and penalties for states that do not participate in the program. The pilot document provided an estimate of cost for implementing the system by the states, for implementing and operating the central site by AAMVA and for acquisition of vehicle theft and Manufacturer Certificate of Origin data from NICB and the Polk Company respectively. The total cost for the national implementation was estimated at 33.9 million from which 24.2 million was designated for state implementation³.

In 1999, the General Accounting Office (GAO)⁴ recommended that a cost benefit analysis be performed to assess the continued investment of a national NMVTIS roll out. In 2000 the National Institute of Justice (NIJ)⁵ contracted with the Logistics Management Institute (LMI) to perform the cost-benefit analysis. At the time of the analysis a total of seven states were participating in the NMVTIS program: Arizona, Florida, Indiana, Kentucky, Massachusetts, New Hampshire, and Virginia⁶.

LMI used the following five (5) different scenarios to analyze the benefits of the NMVTIS program for consumers, state and local governments, the federal government, and insurance companies:

- ▶ Scenario 1 - the system is implemented in the seven pilot states only
- ▶ Scenario 2 - the system is implemented in the seven pilot states and all states across the US/Canadian border
- ▶ Scenario 3 - the system is implemented in the seven pilot states and the problem states identified by FBI
- ▶ Scenario 4 - the system is implemented in the seven pilot states and all major ports
- ▶ Scenario 5 - The system is implemented in all 50 states and the District of Columbia

The benefits were classified into three groups: 1) deterrence and reduction of crime, 2) cost avoidance, and 3) system efficiency. The analysis results estimated that benefits ranging from \$4 billion to \$11.3 billion annually could be achieved if

³ For more information please refer to the National Motor Vehicle Title Information system Pilot Information Report available at <http://aamva.net/Documents/vehNMVTISPilotReport.pdf>.

⁴ For more information about the General Accounting Office, please refer to <http://www.gao.gov>

⁵ For more information about the National Institute of Justice, please refer to <http://www.ojp.usdoj.gov/nij/>

⁶ Both Florida and Massachusetts had not fully implemented NMVTIS at the time of the cost analysis.

the NMVTIS program was fully implemented in all 50 states and District of Columbia (scenario 5).

The analysis concluded that the benefits of NMVTIS program were substantial and that the net values for the 2001 – 2006 implementation period would range from \$0.6 billion to 9.5 billion (in year 2000 dollars) ⁷.

Since the cost-benefit analysis was published in 2001, AAMVA has been working on expanding the number of states that participate in the NMVTIS program. Today, there are currently twenty nine (29) states that participate in the program at varying modes of integration. This represents about fifty (50) percent of the overall vehicle population in the country. As AAMVA continues with its implementation efforts, the overall success of the NMVTIS program will depend on increasing the number of participating states and the percentage of the vehicle population represented by the system.

⁷ For more information please refer to the *National Motor Vehicle Title Information System Cost Benefit Analysis Project Report (NJ004S2)* of June 2001.

3. Observations and Analysis

The IJIS Institute TA Team completed a brief document review prior to the site visit. The documents – submitted by AAMVA - contained relevant project details and specific information about the NMVTIS program. During the TA site visit, additional materials became available and the TA Team interacted with key stakeholders for three days of presentations and question and answer sessions.

As part of this TA project, the IJIS Institute and AAMVA conducted a national survey of the NMVTIS state implementation process. The goal of the survey was to obtain information from states that are participating in the NMVTIS program and from states that are not participating.

This section highlights the general observations and analysis gathered during the TA project. It should be noted that the detailed results of the survey can be found in Appendix 2 of this report.

3.1 AAMVA Central Site Operations

3.1.1 System Capabilities

The goal of the NMVTIS system is to provide complete and accurate title and vehicle information to assist the titling process and to provide title and brand (vehicle condition) information to prospective purchasers. The information exchange enables verification of a vehicle's titling history, brand history, and theft history prior to issuing a new title for the vehicle.

A vehicle brand is defined as a mark on a record or document that is associated with a vehicle. Brands indicate that a particular vehicle has received a form of damage such as flood damage, sand damage and fire damage. A vehicle brand may also indicate other information that may affect the value of the vehicle such as odometer information. State titling agencies print brands on title documents to provide a measure of protection to consumers, who may not otherwise know about damage to the vehicle or other conditions that may affect its value. Brands are intended to be a permanent part of the vehicle record. Even if the damage is repaired, the brand should remain associated with the vehicle. There are variations in the brand classification across states and jurisdictions. The brand history data contained in NMVTIS allows brand information to be managed in a more efficient and consistent method, thereby reducing the incidence of titling salvaged vehicles across jurisdictions.

NMVTIS also integrates with the National Insurance Crime Bureau (NICB) theft database thereby providing access to vehicle theft records and vehicle theft histories. Some states' laws or regulations prevent titling a vehicle if it has been reported stolen in the NICB database. Other states require additional information, such as a hit on an NCIC record, before denying a title.

The NMVTIS central site operations provide the infrastructure for the states to inquire and update data related to vehicle title and brand information and to inquire on vehicle theft information. NMVTIS is a pointer based system which allows for high data accuracy. The concept of this pointer based system is to not store all the information about a vehicle in a central site but only a pointer to the full record at the state level. Thus the scope of the NMVTIS central database is to contain pointer information about the title which contains a Vehicle Identification Number (VIN), the state holding the title record, and the title number. The central database also contains information about the vehicle brands and allows preserving the brands between states. The requirement for carrying the brand information from state to state is due to the differences in brand standards between the states. This assures that any brand on a vehicle is preserved and available upon inquiry. The NMVTIS central site also enables states to access stolen vehicle data from the National Insurance Crime Bureau (NICB) and to integrate the theft inquiry and response into the titling process.

NMVTIS offers two types of current title inquiry transactions: new vehicle inquiries and used vehicle inquiries. In addition, title history, brand and theft inquiries are available. A new vehicle inquiry provides information to support the application for titling a new vehicle that has never been titled or registered. Most inquiries are done using the VIN as the search term. The new vehicle inquiry transaction checks for a Manufacturer's Certificate of Origin (MCO) record, an existing title record, brands already applied and a current theft record. The new vehicle inquiry can help state titling agencies identify if a vehicle has been titled in another state and if an MCO presented by the applicant is valid. The inquiry response indicates if the vehicle has been branded or reported stolen.

The used vehicle inquiry normally provides information to verify an existing title on a used vehicle. It provides information to assist in re-titling vehicles that have been titled at least once. Like the new vehicle inquiry transaction, the used vehicle transaction provides information regarding a vehicle's titling history, brand history, and theft history. The used vehicle inquiry also provides a State of Title (SOT) response that includes title data, registration data, lien data, and vehicle data⁸. The response to the used vehicle inquiry provides information to help verify data in the titling application, including the current title, and to change the state of title on the pointer record, if the vehicle is moving from one jurisdiction to another.

The central site's function is also to further enhance the system and to provide interfaces to other potential consumers of NMVTIS information. Listed below are possible enhancements and interfaces which can improve the system's process or increase the system's impact in short or long term:

⁸ Vehicle data includes model name, body type, odometer readings, vehicle color, fuel type, vehicle weight, and other data.

- ▶ Provide means for integration with law enforcement systems and portals to make the NMVTIS data more generally available for law enforcement purposes⁹
- ▶ Provide a secure interface to the system data for consumers and consumer serving agencies
- ▶ Integrate the system with U.S. Customs to enrich the data and increase the data integrity by including import and export information
- ▶ Reestablish the interface to The Manufacturer Certificate of Origin (MCO) system to allow performing verification of titles on new vehicles

3.1.2 System Architecture

The NMVTIS system architecture and the underlying infrastructure are based on other successful implementations of AAMVA application environments such as the Commercial Drivers License Information System (CDLIS)¹⁰. The CDLIS program has operated in all 51 U.S. jurisdictions (50 states and the District of Columbia) since April 1, 1992. As of April 1, 2004, there were more than 11.5 million Master Pointer Records on CDLIS, growing at an average rate of nearly 40,000 new records per month. CDLIS is a good example of a system architecture that successfully uses the Network Control Software (NCS) and Unified Network Interface (UNI) developed by AAMVA.

Like CDLIS, the NMVTIS application environment is built on top of AAMVANet which is a functionally robust transactional based network that provides a uniform means of connectivity between users and any applications hosted by AAMVA on AAMVANet. Like many AAMVA applications, NMVTIS is traditional client-server system architecture.

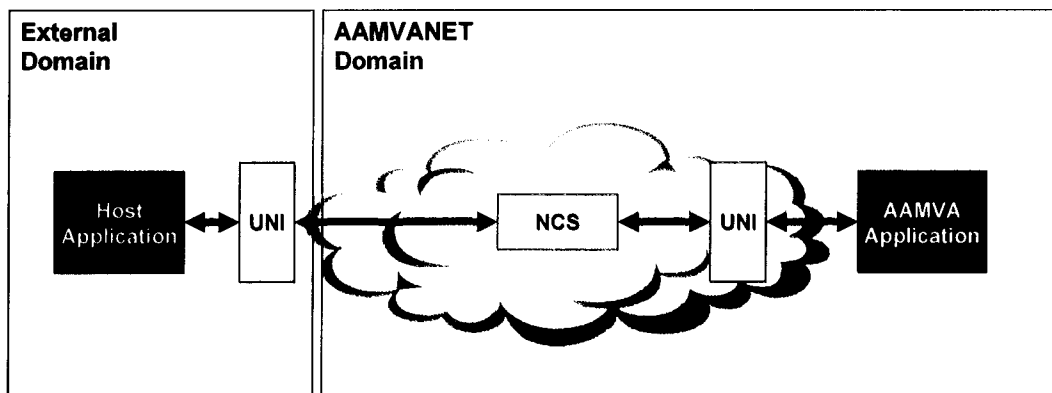


Figure 1: Components of an Application hosted by AAMVA

⁹ Currently only available through the title agency

¹⁰ For more information about the Commercial Drivers License Information System please refer to http://www.aamva.net/drivers/drv_AutomatedSystemsCDLIS.asp

As depicted in Figure 1 (*Components of an Application hosted by AAMVA*) there are three major components to any application hosted by AAMVA: The Network Control Software (NCS), the Unified Network Interface (UNI), and the AAMVA Application. The following section provides a brief overview of each component.

Network Control Software (NCS)

The NCS is a core part of AAMVAnet and is the robust transactional based middleware responsible for all messaging between a client application and any server application in the AAMVA Network. In conjunction with the UNI, it is responsible for the data link, network, and transport layer connectivity between the clients and the servers. Any individual transaction can involve several messages between clients and servers.

Through February 2006, all messages were implemented with the AAMVA Message Interchange Envelope (AMIE) protocol, which is a traditional byte based messaging protocol. Beginning in March 2006, an enhanced NCS, called NCS II, added a second messaging structure named Messaging over AAMVAnet using XML (MAX) which defines the messaging payload in Global Justice XML Data Model (GJXDM)¹¹. The NCS handles all messages and transmits them to destination sites.

Unified Network Interface (UNI)

The UNI is a product that was developed by AAMVA to assist States (and other organizations) to communicate data with AAMVA applications. The UNI product resides on a site's host environment and plays an interface role between a site's application system and the AAMVA telecommunications network. The UNI currently supports fourteen (14) AAMVA applications including the NMVTIS.

The UNI functions as both an **application** and **network** interface between the state applications and the AAMVA applications. It was designed and developed to greatly simplify the ability of a State to connect to AAMVA applications such as the NMVTIS by managing data link, network, and transport connectivity with the NCS.

In its role as an application interface, the UNI acts as the Application Program Interface (API) that provides a set of routines, protocols, parameters, and network specific requirements. The main application interface functions provided by UNI are message translation, message grouping, site application notification, store and forward, and time-out processing. In its role as a network

¹¹ For additional information regarding the GJXDM, please refer to: <http://it.ojp.gov/jxdm>

interface, UNI provides routing validation, network traffic logging, message delivery processing, and management of network administrative messages¹².

To accommodate different application and network service requirements, UNI can operate in either on-line or batch operating modes or in a combination of both. Additionally, the UNI allows the states to connect to AAMVA applications independently of their technical environment and infrastructure. It is available for all of the major system environments used by participating states. It is available for multiple mainframe types as well as other computing environments such as UNIX platform¹³ and the Microsoft .NET Framework¹⁴.

AAMVA Applications

The AAMVA application is the server interface that provides some service to an AAMVA user. The details of the given application will vary based on the application requirements.

The system architecture behind AAMVA is robust and based on industry best practices, and has a proven performance record as demonstrated by other AAMVA based application programs such as CDLIS. In addition, the general ongoing evolution of AAMVANet (NCS and AAMVA Applications) is seeing a phased shift towards the use of World Wide Web Consortium¹⁵ (W3C) compliant and GJXDM conformant messaging using the aforementioned MAX format.

The NMVTIS Application

The NMVTIS application is a traditional client-server system architecture residing on the AAMVA network. Figure 2 (*NMVTIS System Architecture*) below illustrates the currently supported functionality of NMVTIS.

¹² For detailed information regarding the UNI, please refer to: <http://www.aamva.net/products/proSoftwareUNIOverview.asp>

¹³ For more information on the UNIX platform, please visit: <http://www.unix.org/>

¹⁴ The Microsoft .NET Framework, more commonly known as simply the .NET Framework, is a software development platform created by Microsoft. <http://www.microsoft.com/net/default.aspx>

¹⁵ For more information regarding the World Wide Web Consortium refer to <http://www.w3.org>

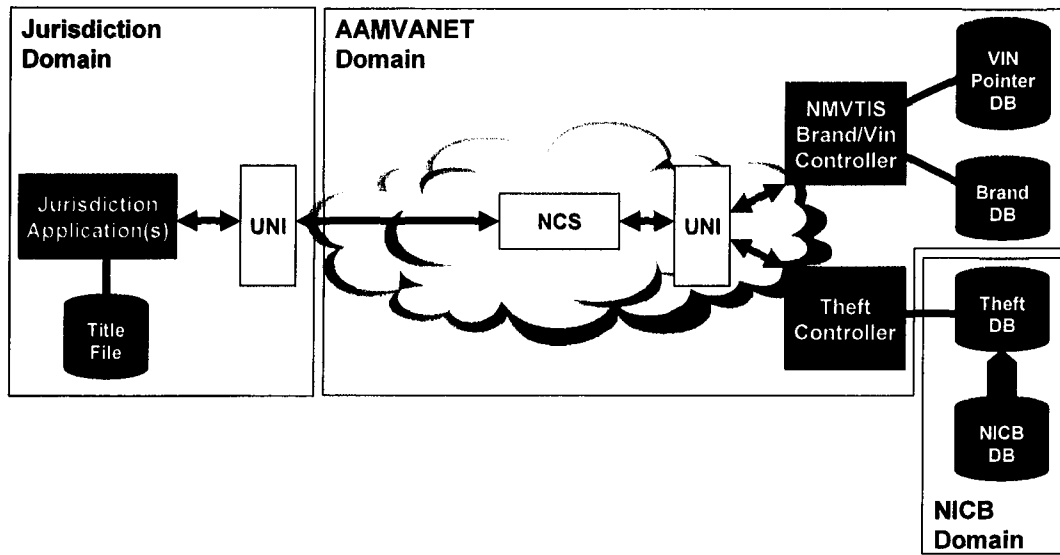


Figure 2: NMVTIS System Architecture

As depicted in Figure 2, the NMVTIS architecture is comprised of the following core components:

- ▶ VIN Database
- ▶ Brand Database
- ▶ Theft Database
- ▶ NMVTIS Brand/VIN & Theft Database Controllers
- ▶ Jurisdiction Application

VIN Database

The VIN Database is an indexing (or pointer) database that contains minimal title information regarding vehicles. In effect, it “points” to the database or databases that show a title on record within a given jurisdiction.

Brand Database

The Brand Database contains all branding information associated with a vehicle.

Theft Database

The theft database is maintained by NICB and is a mirrored image of the National Crime Information Center (NCIC) database. This mirrored database is managed by the NICB and does not provide real-time theft data. It should be noted that NMVTIS does not provide access to the real-time data of the National Crime Information Center (NCIC) database. However, it should also be noted that unlike NCIC, the data regarding outstanding stolen vehicles provided by NICB is not purged after 5 years. It therefore provides a historical record which

is richer than NCIC. Some states find it useful to receive records of un-recovered stolen vehicles that are greater than five years old, while other states, by law or regulation, must find the record on NCIC before taking action.

NMVTIS Brand/VIN & Theft Database Controllers

The Brand/VIN controller comprises the programs and data to maintain the VIN pointer file and Brand file and to respond to title and brand inquiries and updates from users. Responses to queries contain data to validate the existence of title and brand information associated with a vehicle. The Brand/VIN controller also serves as a broker to other participating titling databases allowing users to “drill down” and access detailed title information at the jurisdiction.

The theft controller comprises the programs and data to maintain the Theft file and to respond to theft inquiries.

While the NCS is responsible for transmitting messages to destination sites, the controllers provide the business process requirements surrounding the ability to perform queries and broker drill down requests for detailed data from a jurisdiction’s database.

Jurisdiction Application(s)

The jurisdiction applications use NMVTIS to determine title validity. More is discussed about these applications in section 3.2 (*State Level Activities - State Technical Architecture*).

Functionally, the following behaviors are supported by the NMVTIS System.

- ▶ Batch Upload - the means to initially populate and subsequently update the VIN and brand databases with basic state title information. The need to use the updating capability is negated when a jurisdiction is using the Online Processing.
- ▶ High Level Query - the means of identifying the state with the current title for a given vehicle (there should only ever be one) and what brands, if any, are associated with the vehicle. This type of query would be made available via a Prospective Purchaser Interface that would be targeted towards companies wishing to offer such a service to the public.
- ▶ Detail Query - A specific request that is brokered by the Brand and VIN controller to propagate the request to the target state to provide the detailed title information to the requestor.
- ▶ Online Processing - a means of allowing interactions with jurisdiction title applications to occur in real-time and be transparent to end users of the title applications. Functionally, this integration keeps NMVTIS synchronized with a jurisdiction’s title database in real time.

Figure 2 (*NMVTIS System Architecture*) reflects the current system architecture of the NMVTIS program. The long term architecture is reflected in Figure 3 (*NMTIS System Architecture with MCO and External Service Providers*).

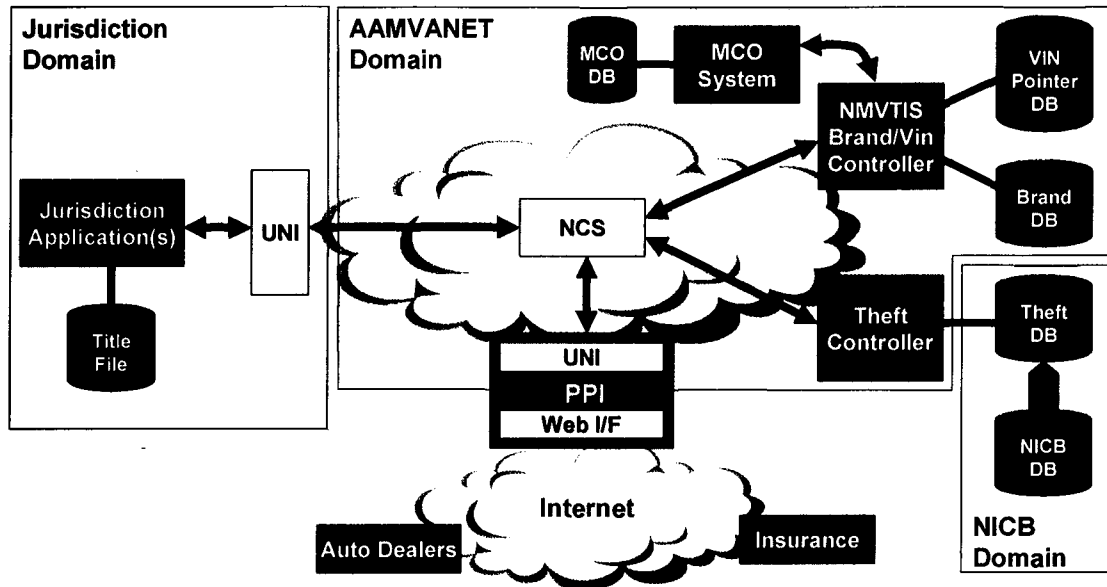


Figure 3: NMTIS System Architecture with MCO and External Service Providers

As can be seen from Figure 3 (*NMTIS System Architecture with MCO and External Service Providers*), there are two (2) additional functions that are included. The first is the MCO (Manufacturer Certificate of Origin) System which contains detailed manufacturer data by VIN, such as the vehicle's major color, minor color, nominal ton rate, number of cylinders, etc. The MCO System is not part of NMVTIS, but NMVTIS interacts with it during some transactions.

In addition, a means for access by external service providers is also envisioned. This means of access is to allow the broader community of interest to receive critical brand information from the database prior to a purchase. Architecturally, the UNI is provided to a service provider, which may also be a jurisdiction, who provides some sort of externally accessible interface to users, such as insurance companies and auto dealerships, who, in turn, provide some form of browser based access to the public.

3.1.3 Operational & Organizational Support

The following section provides some key observations regarding the operational and organizational support provided by AAMVA.

AAMVA plays a significant role in assisting states with the implementation and operation of NMVTIS. Some examples of assistance activities provided by AAMVA include:

- ▶ Initiating a first contact with the states that have not implemented NMVTIS
- ▶ Educating the states on the benefits of implementing the system
- ▶ Assisting the states in the business process mapping and high level architecture design
- ▶ Providing guidance and documentation during the implementation process
- ▶ Assisting the states in the final certification testing and launch process
- ▶ Gathering performance measures and statistics
- ▶ Identifying and defining issues for participating states to resolve together
- ▶ Providing UNI training and installation support

AAMVA staff provides operational and organizational support to state motor vehicle administrators in the following key areas:

System Support and Maintenance

As described in the System Architecture section, AAMVA has developed and implemented a comprehensive and robust system architecture for the NMVTIS. As part of the ongoing maintenance of NMVTIS, AAMVA staff work closely with participating states to ensure that the data files are structured appropriately, and provide support in updating data files and system processes to meet changes made in individual state processes that have potential impact on the overall function and efficiency of NMVTIS.

System Administration

AAMVA acts as the administrator for the technology system providing a central portal for exchanging titling data between individual state systems. AAMVA has contracted the responsibility for maintaining the hardware and data archive with IBM in Texas.

Working Committee and Business Committee

The states participating in the NMVTIS program have developed a “users group” to discuss and share information on how to maximize the efficiency of the individual state’s systems, as well as establish some level of operational and titling workflow standards. This is an important function, since each state has regulatory control over vehicle titling, and therefore there are essentially more than 50 sets of operational and workflow standards that the NMVTIS program must operate within.

As part of the NMVTIS development effort, State Motor Vehicle Administrators receive some operational and organizational support and assistance from AAMVA in the form of Tiger Teams that provide technical support and analysis on a limited basis.

System Documentation

AAMVA has developed a comprehensive set of documentation to support the implementation of batch-mode and online data exchange of vehicle titling data through the NMVTIS program. The documents include:

- ▶ **NMVTIS Online Procedures Manual:** this document is a user guide for using the NMVTIS application in the online mode. It details the step-by-step operational procedures of the application.
- ▶ **NMVTIS Batch Procedures Manual:** this document presents the procedures for reviewing and resolving errors in the batch data received from jurisdictions.
- ▶ **NMVTIS System Specification for State Batch Processing:** this document presents the technical and functional specifications for the NMVTIS for batch processing, and describes the design architecture of the system. The purpose of the document is to provide all information necessary for batch processing. Included in the document is a good description of how states would initiate and maintain a batch processing environment, as well as a description of how to phase the overall implementation of NMVTIS from batch to full online participation.
- ▶ **NMVTIS System Specification for Online Processing:** this document presents the technical and functional specifications for the NMVTIS for online processing, and describes the design architecture of the system. The purpose of the document is to provide all information necessary for online processing. Included in the document is a good description of how states would initiate and maintain a batch processing environment, as well as a description of how to phase the overall implementation of NMVTIS from batch to full online participation. Due to the additional complexity of online processing, the manual is significantly more comprehensive than the batch processing specification. The document is over 500 pages.

There does not seem to be a document - such as a brochure - that clearly and concisely communicates the need for a NMVTIS system and the important benefits of participating in the NMVTIS program. This information is contained in presentations but not in a "take home" form.

Tiger Teams and Help Desk

AAMVA employs a group of information technology experts who work closely with state DMV's when they plan on implementing NMVTIS. These Tiger Teams assist in-state staff with working out technological or functional problems with hooking up the state's legacy vehicle titling system to the NMVTIS program. In many cases, states themselves have not had sufficient resources available to implement the program. In addition, the Tiger Teams are not

sufficiently staffed or funded to be capable of implementing NMVTIS at the state level, without in-state support.

AAMVA also maintains a help desk support team. This team assists state-level NMVTIS managers and users at participating states in working out problems they are having with the program. The help desk operations include email and telephone communications to identify problems and work out solutions.

3.2 State Level Activities

3.2.1 State Titling Process

While the laws and regulations differ from state to state, the titling business process followed by each state does involve some common features and functionality, including collecting vehicle owner information and the information on the physical characteristics of a vehicle. Common vehicle information that is collected includes:

- ▶ Make
- ▶ Model
- ▶ Year
- ▶ Odometer
- ▶ Color
- ▶ Axle Weight
- ▶ Engine Size/Fuel Type
- ▶ Brand
- ▶ Vehicle Identification Number (VIN).

The state titling process is defined in Figure 4 (*State Titling Process*). This flow represents a generic process. There are many variations among the states.

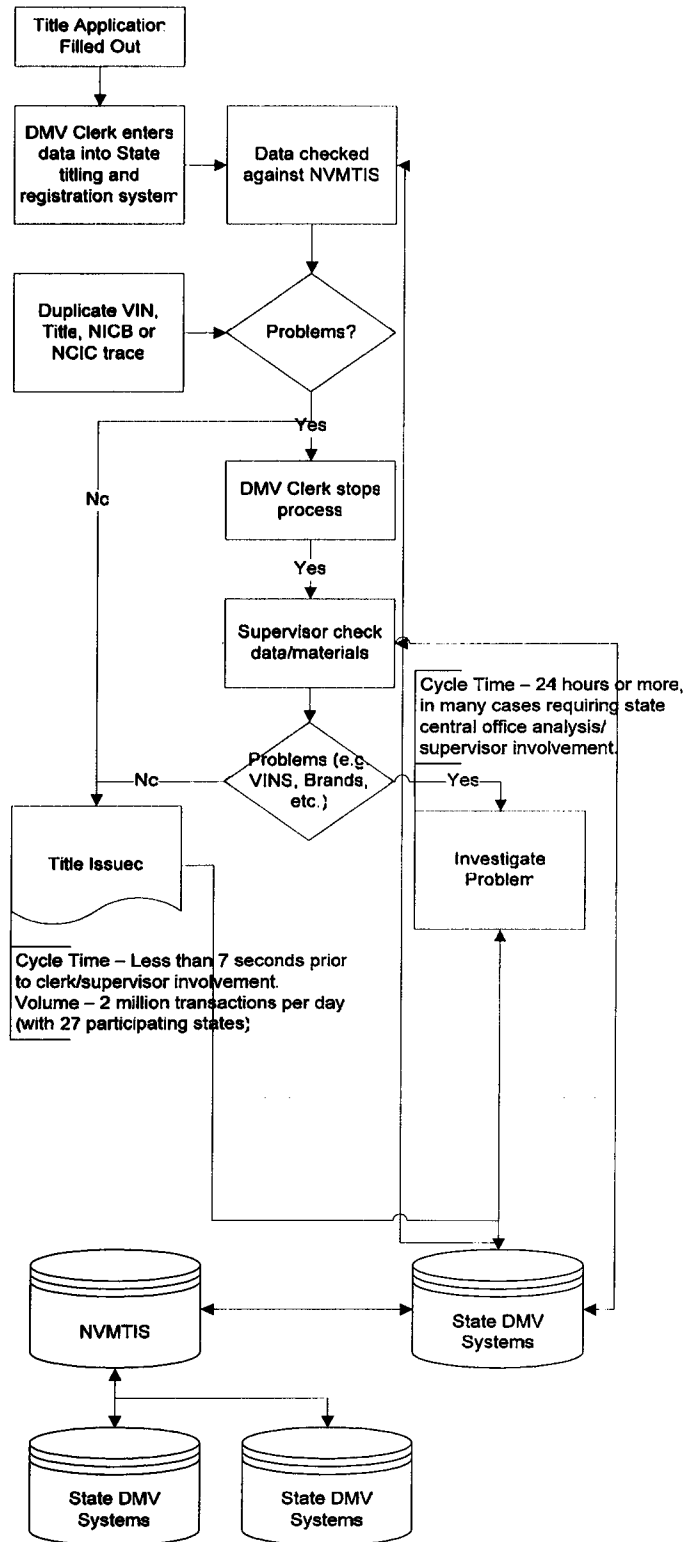


Figure 4: State Titling Process

3.2.2 State NMVTIS Participation

The success of NMVTIS depends on the number of states participating in the program. An increase in the number of participating states would lead to an increase in the amount of vehicle title and brand data thereby improving the reliability of the title verification process. Also, if a larger percentage of the vehicle population is represented by NMVTIS, the system will bring more value to the law enforcement and consumer communities who are potential users of the system's data.

States can chose to participate in NMVTIS on the following different modes or methods:

- ▶ Batch Mode
- ▶ Batch and Inquiry Mode
- ▶ Partial Online Mode
- ▶ Full Online Mode

Batch Mode

States using the NMVTIS batch process mode deliver a full extract of their title and brand data by sending daily, weekly or monthly incremental batch updates to AAMVA. The current batch upload schedule is as follows:

State	Frequency
PA	Weekly
AL	Monthly
ID	Monthly
GA	Monthly
TX	Weekly
LA	Weekly
NJ	Weekly
NC	Weekly
NE	Weekly
WI	Weekly
FL	Weekly
OH	weekly
IA	Weekly
WY	Weekly
MA	Daily

Verification of the NMVTIS "interstate" title, brand and theft data as required by law is not performed during vehicle titling. However other states can verify titles against the batch data provided by the state.

Batch and Inquiry Mode

In this case the states implement the batch methodology describe above. In addition, states integrate one or all of the NMVTIS inquiry transactions into their titling system.

Verification of title, brand and theft data during vehicle titling can be performed when implementing the batch and inquiry mode.

Partial Online Mode

In this case the states implement same batch process as described in the batch and inquiry mode. In addition states integrate some of the NMVTIS inquiry and update transactions into their titling system.

Verification of title, brand and theft data during vehicle titling can be performed in this scenario.

States implementing the partial online mode are usually targeting full online implementation but have not yet implemented all NMVTIS transactions in online mode.

Full Online Mode

States that have implemented the full online mode have integrated all of the NMVTIS transactions in their titling system.

Verification of title, brand and theft data during vehicle titling can be performed in this scenario. The state data is up to date in the NMVTIS system and other states can request additional information from the state during the titling process.

For states implementing any update transactions in batch mode it is important to achieve daily incremental updates in order to improve the quality of the NMVTIS data.

The target of NMVTIS is to achieve complete and accurate vehicle and brand data from all states. This requires full online participation from all states. The different levels of participation mentioned above allow the states to employ a phased approach to achieve full participation in the NMVTIS implementation.

The current breakdown of the different NMVTIS participation modes is as follows:

Participation Level	Number of Sates
Batch	10
Batch and Inquiry	5
Partial Online	6

Full Online

8

Note: There is also an option for a state to participate in an inquiry only mode for theft data. While this participation is not part of the NMVTIS road map it is a good starting point for the state. Montana participates in this mode.

The usual state implementation process starts with a presentation to the state of the overall system architecture and requirements. The different implementation levels are presented to the state at that time. Initial high level analysis is performed to evaluate the business processes and the environment in the state against the NMVTIS workflow and architecture. As a next step a project plan is submitted to AAMVA and the grant funding process is started. As soon as the state implementation project is kicked off, an AAMVA Tiger Team performs a technical assistance site visit to the state or conducts a series of conference calls. The Tiger Team assists the state in the high level business and technical analysis, provides guidance on understanding the system and the documentation and facilitates the development of a state implementation strategy. As a next step the state performs the detail analysis and design and starts the implementation process. AAMVA provides resources to the states via phone or email for addressing any questions or issues during the process. AAMVA monitors progress during this phase. Once the state development is completed, a formal testing and certification process is performed. Upon final sign off of the certification testing the system is moved to production.

Main challenges of the NMVTIS implementation for the states are:

- ▶ Funding the implementation
- ▶ Allocating the resources required for the implementation
- ▶ Performing the business analysis and determining the impact of the system to their business processes
- ▶ Technical integration of the NMVTIS system with the state legacy titling application.
- ▶ State technical architecture (legacy mainframes applications)

The main challenges AAMVA faces during the implementation process are:

- ▶ Complexities in the mapping of the state business process and the NMVTIS workflow due to legal and business rule differences specific for each state
- ▶ Complexities in the mapping of the state nomenclature for common system data elements and the NCIC standards used by NMVTIS (for example brands, vehicle types, etc.)
- ▶ Lack of on-going and regular communication between AAMVA and the state during implementation and lack of resources at the state to facilitate this communication and to assure that the system implementation is on track and in compliance with the NMVTIS architecture and requirements

- ▶ Multiple implementation issues are discovered during the certification process and very often AAMVA and the state need to go back to the drawing board and reevaluate requirements and implementation strategy to address them.

Once the system is in production, the majority of the operational cost a state incurs is associated with the resolution of data errors encountered during the title verification and record update process.

The state operational cost to perform the above activities can be reduced if the implementation of a paperless process between third party agencies and the state or between third party agencies and NMVTIS is further enhanced and completed. Also if a higher percentage of the vehicle population is represented in NMVTIS the number of data issues and errors will be significantly lower.

3.2.3 State Technical Architecture

As previously mentioned, the UNI is an AAMVA product that acts as the application and network interface between the state titling application and the AAMVA NMVTIS application. Because different states have different types of systems, the UNI is available for all major mainframe systems as well as the UNIX platform and Microsoft .NET Framework. AAMVA also provides comprehensive specifications for implementing all aspects of NMVTIS. In its simplest form, the functional components of the application can be described as follows:

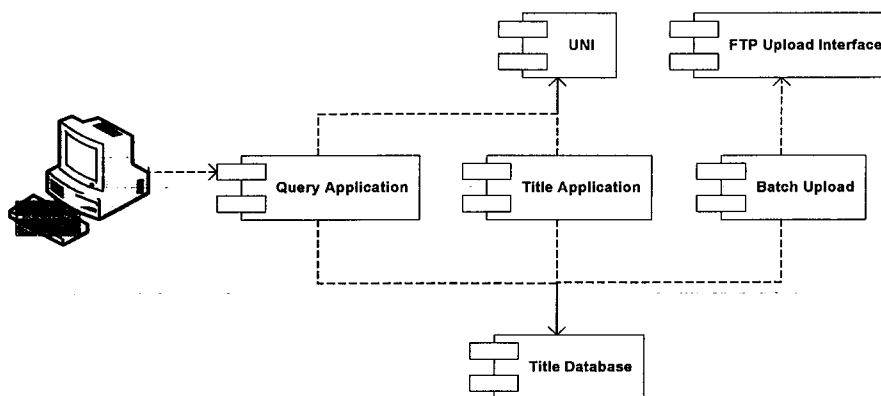


Figure 5: Functional Components of the Application

From a practical standpoint, each of these components could be implemented separately to achieve some degree of NMVTIS participation. The query application is effectively a very simple stand alone means allowing a user to run inquiries against the NMVTIS database to receive an indication of the validity of a VIN and title and whether the NICB has any data. From a technology

perspective, this can be implemented as a web service, a simple browser, a mainframe application, etc. By itself, the query interface is of limited usefulness to a user since it is solely dependent on the data that has been uploaded to NMVTIS by other participating jurisdictions.

The batch application is really the most fundamental application to NMVTIS as the data sent to NMVTIS from a jurisdiction's title database is what gives the system value. The batch upload by itself serves two purposes:

- ▶ Initially populate the NMVTIS databases with information from the jurisdiction's title database
- ▶ Periodically update the NMVTIS databases with new, modified, or deleted entries.

When used in conjunction with a query application, a jurisdiction can realize immediate benefits from NMVTIS for relatively low effort.

The titling application allows for the real-time synchronization of NMVTIS to a jurisdiction's database. The implication is that existing title applications need to be re-factored to integrate with NMVTIS. The degree of complexity for this re-factoring is influenced by:

- ▶ The complexity of the overall work flow (business process) for titling a vehicle in a specific jurisdiction.
- ▶ The degree of automation of the overall work flow into the title application
- ▶ The age and technology implementing titling application
- ▶ The skill sets of the technical resources related to both the business process and the technologies associated with the titling application.

Each of these components can be implemented independently of one another and can also be implemented on different platforms with different technologies. The only common point is that they all must work with the jurisdiction's title database. This means that the standalone query could be implemented as a web browser, the batch upload implemented on a .NET Framework or Java Platform, and the titling application in a mainframe program.

Comparatively, the implementation of the NMVTIS online processing capability into the titling application is by far the greatest amount of effort and risk because the titling application generally implements a number of business rules. Because the NMVTIS system gives much more information surrounding the validity or accuracy of a title, the decision points of the business process may be affected. Generally, the affected portions of the business process surround the reconciliation of inconsistencies received from NMVTIS that indicate possible fraud or data entry errors. Visually, the areas of the business process and

workflow are likely to be those shown in the workflow depicted in Figure 6 (*Affected business process and workflow*).

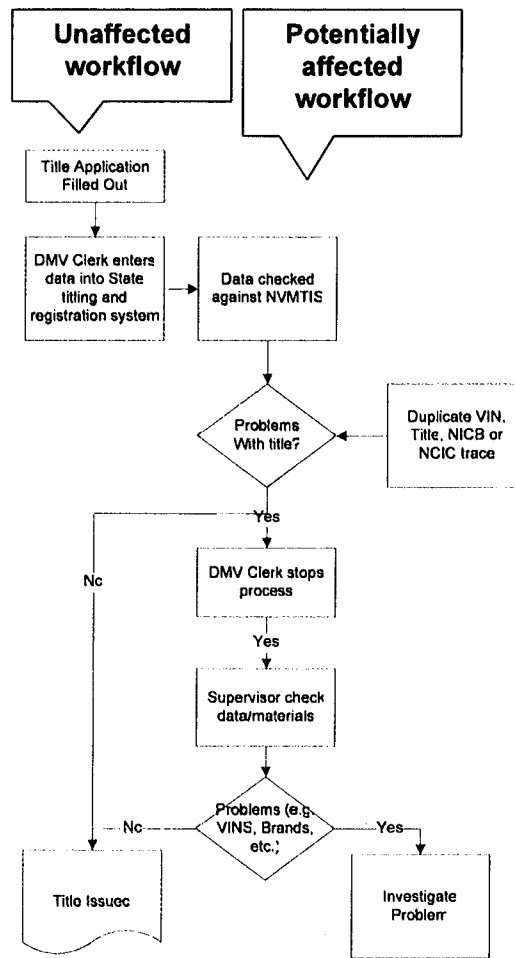


Figure 6: Affected business process and workflow

3.2.4 State Implementation Issues

The majority of states participating in the NMVTIS program encountered difficulties during the implementation process. The following implementation issues were observed for states participating in both the Batch Mode or in Full-Online mode:

Project Priority

States implementing the NMVTIS program usually find themselves diverting staff and other resources to other high priority projects. This seems to be caused by the fact that although the NMVTIS program is mandated at the federal level, it is not enforced. High priority projects are usually defined by the states as projects that are both mandated and enforced. Consequently, the NMVTIS implementation process is usually spread out over a long period of time. In some case the implementation process is paused indefinitely.

Technical Resources

The availability of staff with the required technical skill set and knowledge of the tilting business workflow is essential to the NMVTIS state implementation process. One of the most challenging issues encountered by states is the availability of qualified technical personnel. States have limited staff resources with the requisite system and business knowledge, and at any one time, several projects compete for those resources. Resource limitations may cause states to rely on assistance provided by AAMVA. In some cases, the resources are present to the jurisdiction but the prioritization of projects affects their availability.

Funding

The following are some key observations regarding the funding of NMVTIS by the federal government and through maintenance fees, as well as how the funds are spent by AAMVA.

- ▶ Initial funding for NMVTIS was provided by the federal government and dedicated funds provided by the pilot states testing out this program.
- ▶ When the program was conceived, considerable debate and analysis was conducted at the federal and state level regarding the funds needed to implement the NMVTIS program. Costs ranged upwards of \$22 million to implement nationally. Seven states became pilot participants and provided some funding for implementing the program. Federal funds were provided for starting up the pilot program; however, no ongoing operational funds have been allocated.
- ▶ Individual states identified resource limitations, in terms of staff availability and financing, as one of the primary hurdle to implementing NMVTIS
- ▶ The existing cost model does not provide sufficient funds to support extensive expansion of the NMVTIS system for the remaining jurisdictions.
- ▶ Existing funding comes from dues paid by participating states, with a funding formula based on the volume of vehicles each state has within the entire program
- ▶ A funding gap exists to expand state participation and maintenance of NMVTIS.

- ▶ AAMVA does not have sufficient funds available to support states in implementing the batch processing version of NMVTIS, which is the first priority for getting full state participation.
- ▶ In addition, there is little funding available to assist individual states in updating their data management and communication technology to communicate in real time with NMVTIS.
- ▶ AAMVA funds are also being used to support AAMVA's working committee, business committee, onsite staff, and help desk support.
- ▶ AAMVA's funding structure to support state implementation of NMVTIS was established in 2001 and has not been changed since. The structure is based on whether a state is going to implement a batch mode or implement a full, online version:
 - Batch - states are provided a small grant of \$10,000 to develop the programming necessary to properly communicate and share data on a timed basis, typically weekly.
 - Online - states are provided a \$300,000 grant to implement the necessary programs and supervisor training to operate the NMVTIS program in conjunction with the state's vehicle titling program. The funding includes installing the program. Overall costs are between \$300,000 and \$600,000, depending on the level of complexity of the state-side system architecture and the amount of work required to make modifications to the interface programs.
- ▶ System upgrades are funded by fees paid by participating states. Fees are determined based on a state's individual portion of the overall vehicle population contained in the national system. It is possible that larger states might consider this formula to be a disincentive.

3.2.5 States Not Implementing NMVTIS

There are many states that are not implementing the NMVTIS program - either in batch mode or in online mode. Some of the reasons that were observed for a State not implementing the NMVTIS program include:

Perceived Complexity

States not participating in the NMVTIS program view it as a big and complicated project. This is exacerbated by the fact that most program documentation is lengthy and technical. They view implementing the program as one big project and not a phased approach. As such, many states are reluctant to start the planning and implementation process.

Legacy System Conundrum

States want to wait until they replace their legacy system with modern equipment before participating in the NMVTIS program. There is a general conception that the implementation of the NMVTIS program would have to be redone from scratch if legacy systems were to be replaced.

Uncertainty of the Program Future

Some states do not implement the NMVTIS program because they are unclear as to whether it will exist in the future. They would rather wait for a clear sign that the NMVTIS program will exist well into the future before dedicating any resource for the implementation.

The AAMVA Board of Directors, at its January 2006 meeting, expressed its support for continuing the program and has provided commitment in the form of internal budget funding. However, this funding source is limited. Complete participation, with the accompanying revenue increase is needed.

4. Recommendations

The IJIS Institute TA team believes that the NMVTIS program provides an invaluable benefit to state vehicle administrators and the public community as a whole. Advantages of the program include improving the state titling process as well as providing key information to consumers and law enforcement agencies. The IJIS Institute TA team also believes that AAMVA is ideally positioned to lead and manage the NMVTIS program. Its technical infrastructure, staff, and experience with other programs requiring the integration between state applications and central AAMVA applications have created an environment well suited for the NMVTIS program.

Based on the documentation review and site visit meetings, the TA Team provided various recommendations to AAMVA. This section highlights the specific recommendations identified during the TA project. Recommendations can be grouped into three categories: general program approach recommendations, technical and functional recommendations, and outreach recommendations.

4.1 General Recommended Approach

The NMVTIS program will achieve its full potential only when a large percentage of the overall vehicle population is represented by the system. This will allow for reliable and efficient title verification thus reducing the potential of allowing vehicles to be titled that have been stolen. This will also increase the quality and usability of the system's data for law enforcement and consumer service purposes.

In order to achieve the above mentioned goals AAMVA should consider the following general recommendations. It should be noted that AAMVA has planned or initiated efforts that address a number of the recommendations, but work has been postponed or limited because of resource limitations.

4.1.1 Mandated and Enforced Program

Limited state resources coupled with a lack of program enforcement at the federal level have resulted in a slow and often stagnant implementation at the state level. Indeed, state implementation of the NMVTIS program is usually a low-priority project. However, when asked to describe the value of the NMVTIS program, the overwhelming majority of states viewed it as very important and useful. A lack of implementation at the state level is usually explained by the fact that the limited state resources must be allocated to other projects deemed high priority because they are enforced.

In order to alleviate this situation, it is recommended that AAMVA reach out to the Department of Justice and lead an initiative to make the NMVTIS program a mandated and enforced program. Enforcing the implementation of the NMVTIS

program at the state level will ensure that implementation of the program at the state level will become a high priority project. Enforcement should also consider the phased approach documented below.

4.1.2 Incentives for Program Participation

As noted in the survey results in Appendix B, the majority of States view direct access to real-time stolen vehicle data as very important. As such, it is recommended that AAMVA work with the Department of Justice to gain direct access to NCIC. This could provide extra incentive to state that are not participating in the NMVTIS program.

4.1.3 Phased Implementation Approach

Increased participation in the program can be achieved by promoting the adoption of a phased implementation approach for state activities. The recommended approach for states currently not participating in the program is to implement a batch upload first (easiest option) and eventually plan for future upgrades to implement a real time online process. The deployment process and documentation can be refined and defined in three distinct phases: batch implementation, batch and inquiry implementation, and full online implementation. This will allow states to start implementation of daily batch participation immediately followed by batch and inquiry participation. One of the benefits of this approach is that with a relatively lower initial investment more states will participate in the program by providing vehicle title data and verifying title and theft data during the titling process.

4.1.4 Prioritizing Project Activities

Identification and prioritization of short and long term goals at the program level will ensure that resources are concentrated on tasks that will allow for a maximum impact. High priority short term goals that should be considered include making the NMVTIS data available to law enforcement and quickly increasing the total number of states using the batch mode to participate in the program. This would result in an increase in the percentage of the overall vehicle population represented by the system and the number of titles verified by the jurisdictions. As discussed below in greater detail, a cost-effective and rapid means of achieving this goal is the promotion of a batch mode participation program to the states that currently have not implemented NMVTIS. The value of the NMVTIS program can be greatly enhanced by promoting batch mode participation. Another high priority goal is to enable use of the information by law enforcement.

4.1.5 Centralizing State-Level Services

The efficiency of the state implementation can be also increased if some system services currently developed by each state are provided centrally by AAMVA.

Examples of these services are standalone online queries for NMVTIS data and an online help desk portal for data error tracking and resolution.

4.1.6 Simplifying the NVMTIS Documentation

A refinement of the NMVTIS system implementation documentation can further facilitate the implementation process. The documentation can be developed by different implementation phases and targeted audiences thus increasing the documentation usability and making it a valuable resource for everybody participating in the implementation process.

4.1.7 Full Lifecycle Technical Assistance

Many of the issues encountered during the state implementation process can be alleviated by increasing the technical assistance made available to the states. AAMVA could also change the focus of its assistance to the states by providing active leadership in all phases of integration and ensuring that knowledgeable resources are available to the states especially during the analysis and design phases of the implementation process. In order to ensure continuity and a long term implementation focus, it is recommended that technical assistance be provided to both technical and management staff.

4.1.8 State-Level Performance Measurements

The overall success of the program can also benefit from defining a consistent set of performance measures at the state level. Gathering statistics based on these performance measures will allow effective communication of the system benefits to states that are considering participation in the program. Comprehensive benefit analysis will also allow AAMVA to increase the understanding of the value of the system by all states and other involved agencies.

The Office of Management and Budget¹⁶ (OMB) developed a tool to formally evaluate the effectiveness of federal programs. This tool, called the Program Assessment Rating Tool (PART)¹⁷ can be used by AAMVA to identify systematic methods of assessing the performance of NMVTIS program activities.

4.2 Technical & Functional Recommendations

From a technical perspective, the architecture of the overall system is very robust. Any changes to the architecture will not influence the rate of adoption by jurisdictions. The problem faced by NMVTIS is fundamentally one of implementation affected by budgetary and priority constraints. Incomplete data in the NMVTIS system reduces its overall effectiveness. As such, one goal should be to accelerate the adoption of batch upload and stand alone query of

¹⁶ For more information on OMB, please visit the following website: <http://www.whitehouse.gov>

¹⁷ Additional information regarding PART can be found on the OMB website at <http://www.whitehouse.gov>

jurisdictions by facilitating its implementation. To that end, the following recommendations are anticipated to speed that process.

4.2.1 AAMVA-Provided Standalone Query Application

A standalone query interface for authorized users should not have to be implemented multiple times by multiple agencies. To this end, it is recommended that AAMVA provide a standalone query application that users would only need to use, and not design. The functionality should allow users to perform manual queries against the database. The State of Virginia took this approach, first developing a standalone help desk system and then integrating NMVTIS functions into the online titling system.

The optimal implementations would be either:

- ▶ An AAMVA hosted and branded web page providing the query. An assumption being made here is that all DMVs will have some degree of TCP/IP access in addition to machines that are capable of running web browsers (e.g. Microsoft Internet Explorer, Mozilla Firefox, etc.)
- ▶ A standalone client that can be installed on any machine supporting the Java Platform or .NET Framework. An assumption here is that all DMVs would have at least some infrastructure to support this.
- ▶ A standalone client developed along the lines of the UNI which can be installed on any platform.

Each of these alternatives has their pros and cons. However, the end goal of accelerating adoption must be maintained. If an accessible query mechanism is available, even marginal and “manual” use by DMVs during the titling process would eventually begin to identify titling issues, even if the DMV running the query was not uploading batch data (i.e., a title is found in another state). Even by itself, at some point, a DMV only using the query would want to integrate to online.

4.2.2 Implementer's Guide

While the existing set of NMVTIS documentation is comprehensive and robust as specifications, their size has a negative effect on the perception of the implementers and planners. It is recommended that a simpler and less lengthy implementer's guide be developed. The guide should highlight a phased implementation process that stresses the use of AAMVA-provided components. The guide should also provide a cookbook approach to implementing the batch upload using an AAMVA batch upload framework (if adopted) and one building the upload from scratch. The guide should contain examples.

4.2.3 Planners Guide

Following from the previous recommendation, a planner's guide should also be considered to help planners and potential planners in their tasks relating to project management and budgeting. Given the degree of present participation, it should also be possible to compile the best practices used by implementers to date.

4.2.4 Future Directions - Exploring Web Services

AAMVA is working on completing the original plan to extract data from state DMV's by use of an extraction and communications program that AAMVA has created, offering either a batch mode transfer or a near-real time transfer. There are still costs to implement this in every state and challenges that have been identified elsewhere in the report.

An alternative is to take what amounts to a leap forward to adopt very current technology. To that end, AAMVA should continue its efforts to implement web services in the NMTIS architecture. In this approach, the effort would entail enabling the individual state systems to generate and make available a web service that would be based on a common data vocabulary and data model to enable the translation of data definitions to a common standard that would then be used by the central AAMVA system to transfer data from the states to a central index. For each state an adapter would have to be created to connect to the state system and map the data contained therein to a common format that could be read by the AAMVA central system. If an indexed approach is built at the central system, the system could be used to provide a fast alert that a vehicle was previously reported stolen, damaged, flooded, etc., to the extent that the state systems contain the necessary data. It is possible that a connection to NCIC could be negotiated to check the current stolen vehicle files to determine if the vehicle has been marked as stolen. This approach could take full advantage of the advanced development work already completed, including the MAX capability created for the states which is already compliant with the Global Justice XML Data Model (GJXDM).

An ideal model for the use of web services in the NMVTIS architecture would be the development of a central site level service that other stakeholders, such as law enforcement agencies, can subscribe to.

There are several companies that have developed tools to accelerate the development of adaptors. Some can automatically generate web services without coding. There are challenges in building adaptors to older database structures; however, the total cost of building such adaptors is likely to be less than the cost to incorporate the existing AAMVA messaging and transfer protocols into the state systems.

More research is required to determine the fit of this solution within the current and projected AAMVA architecture, and to accurately determine the cost of building adapters for each class of legacy systems. The IJIS Institute would welcome the opportunity to assist AAMVA in performing surveys to identify what would be needed to implement such a solution and to assess an estimated budget.

4.3 Outreach Recommendations

The following are general outreach recommendations that should be planned and implemented to improve the overall efficiency and effectiveness of the NMVTIS program.

Enlist the services of law enforcement and public safety groups at the state and local level to market and push for implementing NMVTIS at non-participating states.

State and local law enforcement agencies will benefit significantly by having access to national motor vehicle title data.

Develop a configuration management and strategic business plan for NMVTIS

This strategy is important to demonstrate to all the states that NMVTIS is not only supported now, but will continue to be supported for the foreseeable future. Strategic goals should include:

- ▶ Identify the project priorities such as focusing on implementing Batch processing in all non-participating states.
- ▶ Develop a work plan and schedule for activities to expand NMVTIS participation
- ▶ Include activities to develop additional functionality to coordinate data with Provincial and Federal/State government authorities in Canada and Mexico.
- ▶ Develop a funding financial plan for implementing the strategic plan.
- ▶ Examine the existing funding model for NMVTIS maintenance and upkeep and determine its equity and long term stability.
- ▶ Identify political problems (regulatory issues) that prevent or hinder implementing the plan.

Develop a “communication package” for informing states about the functional and technical architecture of the NMVTIS program.

The existing documentation is useful for the technologists who are involved with implementing and operating the system. However the documents are not useful for encouraging states to become participants. The communication package should highlight the utility, benefits, and costs of the system, and demonstrate the importance in combating fraud and criminal/terrorist activities. The document should also not be lengthy, compared to the 500+ page documents that describe the online mode and batch mode implementations. Smaller documents

are needed to replace the current ones. Redefine incentives for states (survey results will help out here).

The documents should also address how updating legacy state systems would impact the NMVTIS participation. The purpose of addressing this issue is to communicate the fact that states can update their legacy system without having to re-implement the NMVTIS program from scratch.

5 Conclusion

The recommendations described in this report are both tactical and strategic in nature with the ultimate goal of advancing the National Motor Vehicle Title Information System. The IJIS Institute technical assistance team recognizes that it may not be possible to enact every recommendation in this report but strongly encourages that AAMVA support and facilitate a phased implementation approach by participating states while continuing to explore the newer infrastructure technology such as web services.

The IJIS Institute appreciates the opportunity to have assisted on this project, and team members are available for further assistance and facilitation. For more in-depth information about the IJIS Institute or a copy of this report, visit www.ijis.org.

Appendix 1 - TA Site Visit Participants

The following individuals participated in the January 17-20, 2006 site visit:

IJIS Institute:

Redha Morsli
redha.morsli@ijis.org

Joseph Mierwa
jjmierwa@visionair.com

David N. Amble
damble@mtgmc.com

Iveta Topalova
itopalova@analysts.com

American Association of Motor Vehicle Administrators:

Philippe Guiot
Sr. Vice President and CIO
Information Technology

Randall S. Holleger
Senior Director
AAMVA Systems Analysis Department

Charlie Katz
Vehicle Systems Consultant

Reed Rusniak
Director
External Systems, Software Development & System Support

Vivienne Cameron
Vice President of Vehicle & Enforcement Services

Marney Michalowski
NMVTIS Program Manager

Amir Chaudhry
Quality Assurance Analyst

Virginia Department of Motor Vehicles:

Joseph Owsiak
Deputy Director
Title and Dealer Services

Charmaine Campbell
Help Desk Manager/Operator

Rosie Turner
Computer Lead Engineer/Project Manager

Appendix 2 – State Implementation Survey

As part of the TA project, the IJIS Institute and AAMVA conducted a national survey to obtain information on the challenges that states encountered when implementing the NMVTIS program. The survey also reached out to States that have not implemented the NMVTIS program in effort to understand the reasons for not implementing. This section provides a summary of the survey results.

Partial Online or Batch Implementation Survey Results

Title: NMVTIS - Partial Online or Batch Implementation

Author: Ms. Janice Dluzynski

Jurisdiction: VA

Contact Info / Comments: THIS SURVEY IS INTENDED FOR ONLY THOSE STATES THAT HAVE IMPLEMENTED PARTIAL ONLINE OR BATCH NMVTIS. Please do not respond to this survey if you do not fall into that category. If you have any questions regarding this survey, please contact Marney Michalowski at mmichalowski@aamva.org or 703-908-2826. Thank you.

Start Date: 2/1/2006

End Date: 2/24/2006

Status: Active

Total Responses: 8

1 - Please provide the following Agency Information: Agency, Contact Person, Address, City, State, Zip Code, Telephone Number, Email Address and Parent Agency (e.g., Department of Revenue or Department of Transportation).

- 1 - AL. Alabama Department of Revenue Motor Vehicle Division Mike Gamble, Title Section Manager P.O. Box 327610 Montgomery, AL 36132-7610 334-242-9000 mike.gamble@revenue.alabama.gov
- 2 - FL. Florida DHSMV Sherry Allen, MS 11 2900 Apalachee Pkwy. Tallahassee FL 32399
- 3 - ID. Division of Motor Vehicles, Amy Smith, PO Box 7129, Boise, ID 83707-1129, (208)334-8660, Amy.Smith@itd.idaho.gov, for the Idaho Transportation Department.
- 4 - MA. Charles LaRocca 1 Copley Place Boston, MA 02116 617-351-9507 charles.larocca@state.ma.us. Registry of Motor vehicles
- 5 - NE. Nebraska Department of Motor Vehicles, Betty Johnson, PO Box 94789, Lincoln, NE 68509, 402-471-3909, bejohnso@notes.state.ne.us.
- 6 - OH. Franklin R. Caltrider, Registrar, Ohio Bureau of Motor Vehicles, PO BOX 16520, Columbus, Ohio 43216-6520; 614-387-3000, fcaltrider@dps.state.oh.us, Ohio Department of Public Safety
- 7 - PA. Business Contact: Kurt Myers, Director, Bureau of Motor Vehicles-kumyers@state.pa.us Technical Consultant: Brent Bell, Acting Director, Office of Information & Fiscal Services brenbell@state.pa.us
- 8 - WY. Motor Vehicle Services, Sherry Ellis, 5300 Bishop Blvd, Cheyenne, WY 82009, 307-777-3812, Sherry.Ellis@dot.state.wy.us, Department of Transportation

2 - What is the extent of the IT Resources in your agency? (if appropriate, more than one box can be selected)

No resources	0%
Small dedicated in-house staff (1-5 people)	25%
Medium dedicated in-house staff (5-10 people)	12%
Large dedicated in-house staff (11+ people)	38%
Shared IT department (i.e., shared with other agencies)	12%
Vendor(s)	12%
Other	12%

3 - If you answered "Other" to the previous question, please describe your IT resources.

1 - ID. Almost one full time programmer was used during the batch development phase, but after implementation only a fraction of one position is dedicated to maintenance. However, Idaho is undergoing an RFP to outsource automated system development to replace our current system. Our current IT resources are almost non-existent, and we currently use some contract programmers, just to keep our current system going, until such times as an RFP is awarded and a new system developed and deployed.

4 - How often should the NMVTIS data be updated?

Real-Time Updates	62%
Daily Updates	25%
Weekly Updates	12%
Monthly Updates	0%

5 - Please rank the following NMVTIS data and functionalities. Please indicate the ranking even if you currently do not have access to the data and/or functionality. Click on the arrow next to the number box and choose a number. The system will save your numbering order.

Title Data and Verification	Ranking: 1 (Average: 1.625)
Brand Data	Ranking: 2 (Average: 2)
Theft Data	Ranking: 3 (Average: 2.75)
MCOs (Manufacturer's Certificate of Origin)	Ranking: 4 (Average: 3.625)

6 - NMVTIS currently obtains theft data from the National Insurance Crime Bureau (NICB), which maintains a "mirror" file of auto theft data from the National Crime Information Center (NCIC). How important is it for NMVTIS to obtain direct access to NCIC data?

1 Not Important	12%
2	0%
3	38%
4	0%
5 Very Important	50%

7 - The rest of the questions relate to implementation. -- Based on your experiences, how complicated is it for a State to plan and implement an NMVTIS partial online or batch program? (1 being simple and 5 being very complex)

1 Simple	0%
2	0%
3	25%
4	25%
5 Very Complex	50%

8 - Which of the following project phases would benefit from additional technical resources from AAMVA?

Business Process Analysis	38%
System design	62%
Technical implementation	62%
System testing	62%

User training	12%	
Ongoing system maintenance and operation		50%
Project management	12%	
Other	0%	

9 - If you answered "Other" to the above question, please identify the project phase(s) that would benefit from AAMVA resources.

1 - PA. N/A

10 - List any significant issues you encountered during the implementation process.

- 1 - AL. Converting brands when our brands did not mirror those used by NMVTIS.
- 2 - FL. We had significant technical issues in setting up the infrastructure because we are using a Windows based server (not the Mainframe) to house UNI.
- 3 - ID. Translating terminology used in NMVTIS requirements in determining applicable Idaho records to send. Understand exactly which records were needed was difficult. Consequently, the error resolution process was lengthy. Differences in terminology connotations caused confusion and additional work.
- 4 - MA. Inconstancies and lack of communication with AAMVA. Scheduling testing and Structure testing.
- 5 - NE. None
- 6 - OH. Ohio attempted to become a full online update NMVTIS participant. However, the environment in which Ohio currently performs title issuance presented challenges to the environment AAMVA has created for NMVTIS. Ohio is current with title issuance and many other states take 20, 30 or 60 days to issue a new title. Specific to the Theft Inquiries, the fact that vehicles have been recovered but an object was removed such as VIN plate and the theft file is still active presents problems to Ohio as well as other states.
- 7 - PA. N/A
- 8 - WY. Layering as it relates to the pointer file.

11 - How long was the implementation period from initial analysis to the final setup of maintenance and operation processes? What would you recommend to shorten the implementation?

- 1 - AL. Implementation of the batch process took six months.
- 2 - FL. The batch update programs are relatively simple to implement. It has taken us several years to implement NMVTIS online transactions. We have 2 of 3 parts in production and we are structure testing the third part. It was difficult for us to keep resources on the project with so many other projects. To shorten the implementation it would be good to have trained technical resources that the states could use to assist in their implementation.
- 3 - ID. 18 Months (for batch process). Additional NMVTIS staff to respond to questions.
- 4 - MA. 8 months. Clearly document the implementation process and refine the testing process.
- 5 - NE. 6 months
- 6 - OH. More in depth technical assistance and more concise technical specifications for states to use as a participant in the NMVTIS process.
- 7 - PA. N/A
- 8 - WY. 1 year; No suggestions on how to shorten the process.

12 - What next steps should be taken to complete a full online implementation? Please list any significant issues or roadblocks for performing these next steps?

- 1 - FL. NMVTIS will not become fully operational unless its implementation is federally mandated and there are penalties for non-compliance.
- 2 - ID. Idaho's RFP to outsource automated system development to replace the current system may include that the vendor provide a NMVTIS-ready system. Currently there are no internal resources to devote to the on-line phase. Further funding resources will have to sought and approved.

- 3 - MA. Other major projects which require IT resources, such as: MCSIA, The Real ID ACT and Document Authentication. Also, state mandated legislative changes.
- 4 - OH. Funding of the NMVTIS project is a major consideration,
- 5 - PA. PennDOT is currently in the process of rewriting its' legacy computer systems. Full NMVTIS implementation would occur as part of that project
- 6 - WY. Cost.

Full Online Implementation Survey Results

Title: NMVTIS - Full Online Implementation

Author: Ms. Janice Dluzynski

Jurisdiction: VA

Contact Info / Comments: THIS SURVEY IS INTENDED FOR ONLY THOSE STATES THAT HAVE FULLY IMPLEMENTED NMVTIS ONLINE. Please do not respond to this survey if you do not fall into that category. If you have any questions regarding this survey, please contact Marney Michalowski at mmichalowski@aamva.org or 703-908-2826. Thank you.

Start Date: 2/1/2006

End Date: 2/24/2006

Status: Active

Total Responses: 4

1 - Please provide the following Agency Information: Agency, Contact Person, Address, City, State, Zip Code, Telephone Number, Email Address and Parent Agency (e.g., Department of Revenue or Department of Transportation).

- 1 - AZ. Arizona Motor Vehicle Division Stacey Stanton 1801 W. Jefferson, 500m Phoenix, AZ 85007 602.712.8152 sstanton@azdot.gov Arizona Department of Transportation
2 - NV. Carol Falk Department of Motor Vehicles Research & Development Division 555 Wirth Way Carson City, NV 89711 775.684-4562 cfalk@dmv.state.nv.us
3 - SD. Department of Revenue and Regulations Division of Motor Vehicles Debra A. Hillmer 445 E. Capitol Pierre, SD 57501 605-773-5747 605-773-2549 debra.hillmer@state.sd.us Department of Revenue
4 - WA. Washington Department of Licensing Larry Weniger PO Box 9020 Olympia, WA 98507-9020 360-664-6565 lweniger@dol.wa.gov

2 - What is the extent of the IT Resources in your agency? (if appropriate, more than one box can be selected)

No resources	25%
Small dedicated in-house staff (1-5 people)	0%
Medium dedicated in-house staff (5-10 people)	0%
Large dedicated in-house staff (11+ people)	75%
Shared IT department (i.e., shared with other agencies)	0%
Vendor(s)	25%
Other	50%

3 - If you answered "Other" to the previous question, please describe your IT resources.

- 1 - AZ. In addition to full-time state employees, the programming staff is augmented with contract programming resources.
2 - NV. The Department has a technology division comprised of a staff of approximately 50. Seven members of the staff are dedicated to Vehicle Programs. This staff of seven were responsible for programming the NMVTIS system.
3 - SD. Our IT resources are located in another state agency which is not under our control.

4 - How often should the NMVTIS data be updated?

Real-Time Updates 75%

Daily Updates 25%
 Weekly Updates 0%
 Monthly Updates 0%

5 - Please rank the following NMVTIS data and functionalities. Please indicate the ranking even if you currently do not have access to the data and/or functionality. Click on the arrow next to each number box and then choose the number you want. The system will save the numbering order you choose.

Title Data and Verification Ranking: 1 (Average: 1.25)
 Brand Data Ranking: 3 (Average: 2.75)
 Theft Data Ranking: 2 (Average: 2.5)
 MCOs (Manufacturer's Certificate of Origin) Ranking: 4 (Average: 3.5)

6 - NMVTIS currently obtains theft data from the National Insurance Crime Bureau (NICB), which maintains a "mirror" file of auto theft data from the National Crime Information Center (NCIC). How important is it for NMVTIS to obtain direct access to NCIC data? One being not important and five being very important.

1 Not Important 0%
 2 0%
 3 0%
 4 25%
 5 Very Important 75%

7 - The rest of the questions relate to implementation. -- Based on your experiences, how complicated is it for a State to plan and implement an NMVTIS online program? (1 being simple and 5 being very complex)

1 Simple 0%
 2 0%
 3 0%
 4 25%
 5 Very Complex 75%

8 - Which of the following project phases would benefit from additional technical resources from AAMVA? Choose all that apply.

Business Process Analysis 75%
 System design 50%
 Technical implementation 25%
 System testing 50%
 User training 50%
 Ongoing system maintenance and operation 50%

Project management	25%
Other	25%

9 - If you answered "Other" to the above question, please identify the project phase(s) that would benefit from AAMVA resources.

- 1 - SD. You need staff from both sides to understand the process and dedicate their resources. This is difficult to do since there are so many competing projects.
- 2 - WA. From a technical perspective, the AAMVA staff were very knowledgeable, responsive, and helpful throughout the project.

10 - List any significant issues you encountered during the implementation process.

- 1 - AZ. - NICB is not an exact mirror image of NCIC - Confusion when/if to carry over an existing brand displayed on the NMVTIS brand file; current non-participating title displays no brand or equivalent - Theft hits on non-conforming VINS require specific criteria for a true match - Transactions requiring manual resolution are increasing as more states are participating
- 2 - NV. Converting title numbers from the legacy system. What was printed on the title was not the same information that was stored in the legacy database.
- 3 - SD. Understanding of the terms used and how our data and information would be integrated for others to understand. Conveying knowledge from vendor to IT staff for continued maintenance.
- 4 - WA. Data purification and standardization prior to initial data load was a significant effort. During the design phase, the business and technical teams developed business rules that which appeared to well founded, based on the team's understanding of how NMVTIS would respond. Immediately after implementation, the system generated a large volume of exception transactions back to the business. Based on these results, business processes and programming changes needed to be implemented quickly.

11 - How long was the implementation period from initial analysis to the final setup of maintenance and operation processes? What would you recommend to shorten the implementation?

- 1 - AZ. October 1997-June 1999 Time to implement could be shortened by incorporating some of the lessons learned from the pilot states into the business specifications.
- 2 - NV. Two years. During the last 9 months the IT staff was dedicated full-time programmers to the project. We recommend dedicated resources to shorten the implementation process.
- 3 - SD. 18 months. Again it requires that the state IT staff commit the time and resources to meet the deadlines.
- 4 - WA. Approximately 18 months. During the implementation period, several high priority IT projects were competing for the same technical resources. The ability to dedicate full time technical resources to the project would have shortened the implementation.

12 - What are the benefits of a NMVTIS full online implemented (versus batch and partial online)? Are there any negative outcomes which can be directly or indirectly related to the NMVTIS implementation?

- 1 - AZ. -Brand information from other participating states, enables buyer to make more informed decisions. - Central theft file enables AZ to immediately identify stolen vehicles - a good deterrent to title fraud and stolen vehicle trafficking. -Title verification enables AZ to match participating states data against actual title, prior to issuance. -Customer service representatives can electronically access title or stolen data within seconds, which eliminates phone calls to track down information.
- 2 - NV. We have not identified any issues or roadblocks.

3 - SD. On line provides direct access to information in a timely manner. Batch only provides the data provided by the batch which could be anywhere from weekly to monthly. State utilizing batch information are doing so with old data which could create a problem when the next update occurs whereby if it is on-line you have the benefit of the most current data.

4 - WA. A significant benefit of full online implementation is the timeliness of information related to stolen vehicles, odometer tampering, and duplicate VIN identification.

Not Yet Implemented Survey Results

Title: NMVTIS - Not Yet Implemented

Author: Ms. Janice Dluzynski

Jurisdiction: VA

Contact Info / Comments: THIS SURVEY IS INTENDED FOR ONLY THOSE STATES THAT HAVE NOT YET IMPLEMENTED NMVTIS. Please do not respond to this survey if you do not fall into that category. If you have any questions regarding this survey, please contact Marney Michalowski at mmichalowski@aamva.org or 703-908-2826. Thank you.

Start Date: 2/1/2006

End Date: 2/24/2006

Status: Active

Total Responses: 12

1 - Please provide the following Agency Information: Agency, Contact Person, Address, City, State, Zip Code, Telephone Number, Email Address and Parent Agency (e.g., Department of Revenue or Department of Transportation).

- 1 - AR. Michael D. Munns, Administrator Arkansas Department of Finance & Administration Charles D. Ragland Building, Room 2042 1900 West 7th Street Little Rock, Arkansas 72201 (501) 682-4630 mike.munns@rev.state.ar.us
- 2 - CA. California Department of Motor Vehicles Registration Operations Division Lynn Hidley, Deputy Director PO Box 825393 MS D 700 Sacramento, CA 94232-5393 (916) 657-8135 lhidley@dmv.ca.gov
- 3 - DC. Department of Motor Vehicles Rick Whitley 301 C St. N.W. Rm 1024 Washington DC 20001 202 724-7562 rick.whitley@dc.gov Department of Motor Vehicles
- 4 - HI. City and County of Honolulu/ State of Hawaii Preston Ko 650 S. King St, 5th floor Honolulu, HI 96813
- 5 - KS. A. Diane Albert, PSE II Kansas Dept. of Revenue/Div. of Vehicles 915 SW Harrison Rm 162 South Topeka, Kansas 66626-0001 785 296 3601 diane_albert@kdor.state.ks.us
- 6 - MD. MVA 6601 Ritchie Hwy rm 120 Glen Burnie, Md. 21062 Dept of Transportation Deborah Rogers Drogers1@mdot.state.md.us 410-787-7848
- 7 - MI. Michigan Department of State Grace Ueberroth 7064 Crouner Drive Lansing, MI 48918 517-322-3440 ueberrothg@michigan.gov autonomous agency
- 8 - MN. Driver and Vehicle Services Darcel Lewis 445 Minnesota Street, Suite 185 St. Paul, MN 55101-5185 darcel.lewis@state.mn.us Minnesota Department of Public Safety
- 9 - MO. Department of Revenue Information Technology Bureau Room 270, Harry S Truman State Office Bldg. Jefferson City 65102 Randy Hutton Randy.Hutton@dor.mo.gov 573-751-9343
- 10 - ND. Lorrie Pavlicek, Director E-mail: lpavlicek@state.nd.us Motor Vehicle Division ND Department of Transportation 608 E Boulevard Ave Bismarck ND 58505-0780 (701)328-2725 Fax (701)328-1487
- 11 - SC. Lotte Devlin, Policy and Planning Administrator South Carolina Department of Motor Vehicles 10311 Wilson Blvd. PO Box 1498, Blythewood, SC 29016 803-896-4879 lotte.devlin@scdmv.net
- 12 - VT. Vermont Department of Motor Vehicles Ellen Hemond, Director of Support Services 120 State St Montpelier VT 05603-001 (802)828-0188 ellen.hemond@state.vt.us Agency of Transportation

2 - What is the extent of the IT Resources in your agency? (if appropriate, more than one box can be selected)

No resources	0%
Small dedicated in-house staff (1-5 people)	17%
Medium dedicated in-house staff (5-10 people)	33%
Large dedicated in-house staff (11+ people)	33%
Shared IT department (i.e., shared with other agencies)	50%

Vendor(s) 33%
Other 8%

3 - If you answered "Other" to the previous question, please describe your IT resources.

1 - CA. NA

2 - MO. We try and share resources between Motor Vehicle, Driver Licensing, and Taxation when possible.

4 - How often should the NMVTIS data be updated?

Real-Time Updates 33%
Daily Updates 50%
Weekly Updates 8%
Monthly Updates 8%

5 - Please rank the following NMVTIS data and functionalities. Please indicate the ranking even if you currently do not have access to the data and/or functionality. Click on the arrow next to each number box and then choose the number you want. The system will save the numbering order you choose.

Title Data and Verification Ranking: 1 (Average: 1.166667)
Brand Data Ranking: 2 (Average: 2.083333)
Theft Data Ranking: 3 (Average: 3.083333)
MCOs (Manufacturer's Certificate of Origin) Ranking: 4 (Average: 3.666667)

6 - NMVTIS currently obtains theft data from the National Insurance Crime Bureau (NICB), which maintains a "mirror" file of auto theft data from the National Crime Information Center (NCIC). How important is it for NMVTIS to obtain direct access to NCIC data?

1 Not Important 17%
2 0%
3 50%
4 17%
5 Very Important 17%

7 - On a scale of 1 to 5 what is your anticipated (or perceived) level of complexity that you will face when implementing the NMVTIS program? (1 being simple and 5 being very complex)

1 Simple 0%
2 0%
3 25%
4 50%
5 Very Complex 25%

8 - On a scale of 1 to 5 how informed are you about the NMVTIS program (1 being "not informed at all" and 5 being "very informed")

1 Not Informed	0%
2	17%
3	25%
4	42%
5 Very Informed	17%

9 - What are the expected benefits of implementing NMVTIS?

- 1 - AR. None or very little until ALL jurisdictions are fully participating.
- 2 - CA. NMVTIS will: -deter trafficking in stolen vehicles by making it more difficult for thieves to continue the practice of titling stolen vehicles in a different jurisdiction. -reduce title fraud by allowing jurisdictions to verify the validity of an out-of-state title prior to issuing a new title. -protect consumers by giving prospective purchasers access to brand data, which then allows them to determine the market value and road-worthiness of the vehicle prior to purchase.
- 3 - DC. Verification of ownership Verification of brands Report of Stolen Vehicles
- 4 - HI. Public service to discourage vehicle theft for profit by making it more difficult to title a stolen vehicle.
- 5 - KS. Receiving and providing accurate information Accuracy of brands Prompt availability of information
- 6 - MD. standardizing data elements in regards to titling and branding vehicles. Improve data integrity and help in fraud prevention when titling vehicles. Improve information exchange between jurisdictions and public/private systems
- 7 - MI. When fully operational, the benefits will be to decrease the volume of fraudulently obtained titles, reduce the number of titles issued on stolen vehicles, and reduce problems associated with improper or missed title brands.
- 8 - MN. Identifying salvage/branded vehicles from other states.
- 9 - MO. Title verification and title branding to prevent fraud.
- 10 - SC. Fraud reduction, increased accuracy in transferring titles from another state to SC
- 11 - VT. Access to more accurate information, more information

10 - What has been preventing you from implementing the NMVTIS program? Select all that apply.

Budget/Funding	92%
Project Priorities (i.e., need to implement other mandated and enforced programs)	83%
IT Resources (personnel)	83%
Resources (legacy systems)	33%
Complexity of titling systems	50%
Management Resources	8%
Other	25%

11 - If you answered "Other" to the above question, please describe the factors that have prevented your state from implementing NMVTIS.

- 1 - CA. Identification of ongoing AAMVA costs for update and inquiry capability remains an unresolved issue.
- 2 - MN. Minnesota does not have any state-operated MV offices. It has a network of 173 public and private agents (deputy registrars). There will be considerable issues with information and training. Minnesota is

working with a third-party vendor to transmit MV information electronically from dealers to deputy registrars to DVS.

3 - SC. South Carolina asked to be included in the pilot when originally initiated. We were reconfiguring our systems and wanted to integrate NMVTIS as part of our new transaction processing system. We were not permitted to participate and moved on to other projects.

12 - What are the next steps that should be taken to implement the NMVTIS program in your State?

1 - AR. Installing daily FTP batch update.

2 - CA. Discussions are in process with AAMVA regarding a proposal for CA to provide the raw vehicle registration data, and AAMVA complete the reformatting of the data necessary for use by NMVTIS.

3 - DC. Obtain project priority Update prior specifications

4 - HI. Obtain funding for additional staffing resources or reprioritize existing workload.

5 - KS. First, participation in the batch process. We have planned to do this; however, other priorities have taken its place. Full implementation would best come with the re-write of our vehicle information system, scheduled within the next few years.

6 - MD. We are in the process of hiring a vendor to document our requirements for a new title and registration system in this State. NMVTIS will be included as part of any new system we will consider.

7 - MI. We are going to work with AAMVA staff to modify our current batch data that we provide in bulk to commercial customers such as R. L. Polk.

8 - MN. Need more information. Need funding. Need IT resources, including personnel. Need possible legislation. Need to staff a help desk.

9 - MO. We need to look at connectivity issues/resources and cost needed to implement this with the new Archon system as well as the conversion of the existing title system and branded titles.

10 - ND. Would need to see cost benefit to determine value and pursue budget concerns.

11 - SC. Will need to find funding sources for additional dedicated development and implementation staff.

12 - VT. We are going to implement the batch portion in the next several months