MINNESOTA DEPARTMENT OF PUBLIC SAFETY

REQUEST FOR INFORMATION (RFI) SUMMARY

The Legislature directed the Department of Public Safety (DPS) to issue a Request for Information (RFI) to obtain information from vendors regarding the feasibility of engaging a private vendor to develop, deploy and maintain a vehicle information system that replaces the functionality of MNLARS. (Laws of Minnesota 2017, chapter 101, section 2). The legislation directed DPS to submit a report summarizing the responses and information received from qualified vendors. A copy of the enacting legislation is attached. (Attachment A)

DPS issued the RFI for "Replacement of Motor Vehicle Information System" on April 30, 2018. (Attachment B). The deadline for question submission was May 8, 2018. The Department issued an addendum in response to the questions submitted by respondents on May 15, 2018. (Attachment C). Final submissions were due by May 31, 2018.

The companies who responded to the RFI are:

- Business Information Systems (BIS)
- Celtic Systems
- FAST Enterprises

Attached you will find the submissions from each of these companies. The RFI submissions do not provide a full cost for their proposed solutions. Costs that may not be identified include, but are not limited to, configuring for Minnesota specific requirements, future changes to the system, networking, computing and support usage, hardware, licensing, hosting, disaster recovery, necessary state staff, and interface integration.

The costs included in the RFI submissions are only estimates. A more in-depth look of the feasibility, cost and timeline would occur during a Request for Proposal (RFP) process, which is a more robust and lengthy process. All responding companies indicated that they would be interested in submitting an RFP.

Business Information Systems

BIS implemented their Vehicle Title and Registration System (VTRS) in the State of Tennessee in 2017. The project took approximately 24 months from the start of the contract. They are not currently implementing this system in other states.

According to the RFI, the State of Tennessee did not pay BIS until the system went live. The annual maintenance contract is a $.70 cent transaction fee, which generates approximately

$4.55 million annual revenue for BIS. This arrangement was agreed to instead of an upfront fee and annual maintenance cost. BIS states that they do not have ongoing licensing fees. BIS estimates the typical yearly price would be $4.55 million for the State of Minnesota project.

BIS reports that they have over 2,000 simultaneous users throughout the state of Tennessee.

A copy of their submission is attached. (Attachment D).

Celtic Systems

Celtic Systems' Celtic Transportation Services (CTS) product contains a core enterprise platform (CTS-HUB) and 10 additional motor carrier business products. Celtic Systems implemented one or more of their motor vehicle system components in the states of Pennsylvania, Kansas, Montana, Iowa, Georgia, Alabama, Arkansas, South Carolina, North Carolina, New York, West Virginia, Wyoming, Idaho, and the Canadian providence of Ontario. Celtic Systems is implementing components of their product in the District of Columbia, Connecticut, Tennessee, and the Canadian providence of Alberta.

Celtic Systems estimates it would take 2-3 years to implement the Minnesota modernization project. Celtic Systems estimates the average cost of configuration and customization would be in the range of $15 million to $30 million. They estimate that maintenance and support would range between $1.5 million to $2 million per year. Celtic Systems also reported that they have a one-time software license fee of $5 million.

Celtic Systems reports that there are an average of 2,000-3,000 concurrent users in the jurisdictions they currently serve.

A copy of their submission is attached. (Attachment E).

FAST Enterprises

FAST Vehicle Services (VS) consists of seven modules and subsystems. FAST Enterprises implemented their VS system in Arkansas, Utah, Oklahoma, New Mexico, North Dakota, and Mississippi. FAST Enterprises is working on implementing the VS system in Washington, Colorado, Massachusetts, Oregon, Michigan, Georgia, Nebraska, and Maryland. FAST Enterprises is currently implementing their driver services product in Minnesota. They also implemented their GenTax system for the Minnesota Department of Revenue.

FAST Enterprises estimates that it would take approximately 18 months to launch their VS product. Cost estimates range from $33 million to $38 million to implement, which includes the licensing, implementation, software, and hardware costs. Ongoing maintenance estimates range from $4.5 million - $5.5 million per year.

FAST VS reports they can support more than 2000 concurrent users at a time.

A copy of their submission is attached. [Attachment F].

CONCLUSION

Additional implementation information can be found in the attached submissions as the products, experience, and approach to providing motor vehicle systems varies amongst the respondents. The Department did not reach out for additional information from the vendors, so the attachments contain all information known at this time.

ATTACHMENT A

2018 Minnesota Session Laws

Key: (1) ~~language to be deleted~~ (2) new language

CHAPTER 101--S.F.No. 3133

An act relating to public safety; establishing certain requirements with respect to the development and implementation of the Minnesota Licensing and Registration System; requiring a report; appropriating money.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF MINNESOTA:

Section 1. **MNLARS SUPPLEMENTAL APPROPRIATIONS; REDUCTIONS, TRANSFERS.**

Subdivision 1. **Appropriations; MNLARS.**

$9,650,000 in fiscal year 2018 is appropriated from the special revenue fund to the commissioner of public safety for costs related to continued development, improvement, operations, and deployment of the driver and vehicle services information system known as the Minnesota Licensing and Registration System (MNLARS). Of this amount, $2,150,000 is from the vehicle services operating account and $7,500,000 is from the driver services operating account. This is a onetime appropriation.

Subd. 2. **Appropriations; Office of the Legislative Auditor.**

$100,000 in fiscal year 2018 and $250,000 in fiscal year 2019 are appropriated to the Office of the Legislative Auditor from the vehicle services operating account in the special revenue fund for the information technology auditor position established in section 3. This is a onetime appropriation.

Subd. 3. **Use of funds.**

(a) The appropriations in subdivision 1 must be expended only in the specified amounts for the following purposes:

(1) $7,051,000 for contracting to perform software development on the vehicle services component of MNLARS; and

(2) $2,599,000 for technology costs, which consists of:

(i) $100,000 for user authentication and access control management;

(ii) $20,000 for testing environment hardware, including servers and data storage;

(iii) $650,000 for partial relocation of data from the enterprise data center;

(iv) $780,000 for disaster recovery preparedness; and

(v) $1,049,000 for contracted software review and software development support services.

(b) The appropriations in this section must not be spent on:

(1) additional full- or part-time employees employed by the Department of Public Safety; or

(2) an audit, evaluation, or assessment on the feasibility of a proposed plan to resolve MNLARS defects and implement all MNLARS functionality conducted by the Department of Public Safety, the Office of MN.IT Services, or an entity hired by the Department of Public Safety or the Office of MN.IT Services.

Subd. 4. **Adjustments.**

After May 1, 2018, if the commissioner of public safety and state chief information officer determine the amounts allocated in subdivision 3 need to be adjusted, the commissioner and state chief information officer may submit to the MNLARS Steering

Committee established under section 4 a request to adjust the allocated amounts within existing appropriations. The commissioner and state chief information officer must provide, at a minimum, the proposed changes and a line item explanation of how the reallocated funds would be spent. The commissioner and state chief information officer must also submit a written explanation of the need to adjust the funds. A majority of the committee may, by affirmative vote, approve the adjustment to the appropriation amounts in subdivision 3.

EFFECTIVE DATE.

This section is effective the day following final enactment.

Sec. 2. **MNLARS IMPLEMENTATION REQUIREMENTS.**

Subdivision 1. **Definitions.**

(a) For purposes of this section, the following terms have the meanings given them.

(b) "Information technology auditor" means the individual appointed by the legislative auditor under section 3, subdivision 1.

(c) "MNLARS" means the driver and vehicle information system known as the Minnesota Licensing and Registration System.

(d) "Committee" means the MNLARS Steering Committee established under section 4.

(e) "Quarter" means a three-month period starting on July 1, October 1, January 1, or April 1, in fiscal year 2019.

Subd. 2. **Project timeline; deadlines; performance measures; plans.**

(a) By May 1, 2018, the commissioner of public safety and the state chief information officer must submit to the committee:

(1) a detailed project budget;

(2) a proposed project timeline to develop and implement MNLARS that includes specific deadlines and performance measures that must be met in each quarter;

(3) a proposed plan for user acceptance testing, including deputy registrars and auto dealers located both outside the metropolitan area and within the metropolitan area, as defined in Minnesota Statutes, section 473.121, subdivision 2, to the extent such testing is deemed feasible by the Minnesota Deputy Registrars Association and the Minnesota Automobile Dealers Association;

(4) a proposed plan for system stakeholder input on code releases to MNLARS;

(5) a proposed communications plan for transparent reporting on MNLARS outages and slowdowns to system stakeholders, including how to communicate (i) status information in a timely manner and usable format, (ii) actions taken in response to communication, and (iii) responses from the Department of Public Safety and the Office of MN.IT Services;

(6) a proposed communications plan for postrelease reporting on features and fixes to system stakeholders; and

(7) a proposed plan to create greater efficiencies and streamline the vehicle title process to reduce the current backlog and to minimize any future backlogs.

(b) At a minimum, the performance measures required under paragraph (a), clause (2), must provide specific metrics to monitor MNLARS development and implementation activities, including measures of:

(1) the extent to which MNLARS defects have been resolved;

(2) the extent to which gaps in MNLARS functionality have been resolved;

(3) improvements in the ability of MNLARS users to edit transactions;

(4) reduction in the backlog of vehicle titles;

(5) the extent of errors in driver or vehicle transactions;

(6) system performance, including the extent of any slowdowns, outages, or other system performance issues; and

(7) customer service responsiveness, which may include the number of phone calls and e-mails from the general public and stakeholders, and the timeliness of inquiry responses.

(c) The project timeline, deadlines, performance measures, and plans under this subdivision are not administrative rules and are not subject to Minnesota Statutes, chapter 14.

Subd. 3. **Progress reporting.**

(a) By May 1, 2018, and between 20 and 30 days before the start of each quarter, the commissioner of public safety and the state chief information officer must submit a progress report to the committee and the information technology auditor. At a minimum, each progress report must identify MNLARS project activity, including but not limited to:

(1) information sufficient to determine whether deadlines under the project timeline have been met, and an explanation of the circumstances for any deadlines that have not been met;

(2) details on the status in achieving each performance measure;

(3) an overview of project activity during the reporting period, including compliance with each of the plans;

(4) information on project staffing and contractors, including separate lists detailing the amount spent for state employees and the amount spent for private contractors in the preceding quarter, itemized by the number of employees and contractors, the project duties for each, and the agency responsible for employees' or contractors' work; and

(5) information on any additional or unexpected costs identified to date, including a detailed explanation of the additional or unexpected costs and the specific steps taken to reduce other costs to ensure the overall MNLARS project expenditures remain within the project budget.

(b) Each report must include the statement "I affirm that the statements submitted to the committee in this document are complete and truthful to the best of my knowledge." The commissioner of public safety and the state chief information officer must each sign an acknowledgment of this statement.

Subd. 4. **Stakeholder reporting.**

Between 20 and 30 days before the start of each quarter, the Minnesota Deputy Registrars Association, the Minnesota Automobile Dealers Association, and any other stakeholders are each encouraged to submit a report to the committee regarding the progress on the relevant performance measures established under subdivision 2, paragraph (b).

Subd. 5. **Request for information; report.**

(a) No later than May 1, 2018, the commissioner of public safety must issue a request for information as described in this subdivision. The request for information must obtain advice from qualified vendors regarding the feasibility of using a private vendor to develop, deploy, and maintain a vehicle information system that replaces functionality in MNLARS.

(b) The request for information must solicit advice on procuring a replacement vehicle information system that:

(1) is cost-effective, reliable, consumer- and user-friendly, and implemented in a timely manner; and

(2) contains functionality that substantially matches the functionality and features of the legacy information technology system in place prior to initial implementation of MNLARS.

(c) The request for information must be designed to obtain implementation information that includes:

(1) feasibility, costs, and a preliminary estimated timeline or schedule for implementation;

(2) a breakdown of costs for vehicle services components and functionality, including costs of integrating a vehicle services information system with a separately developed driver services information system; and

(3) capacity and experience of a potential vendor.

(d) The request for information under this section must be published in the state register and on the Web site of the Department of Administration at least 14 days prior to closing. The request must otherwise be administered according to the requirements of Minnesota Statutes, chapter 16C, to the extent applicable, except that a vendor's submission does not constitute a response to a solicitation, as defined in Minnesota Statutes, section 16C.02, subdivision 14. The commissioner is prohibited from using a vendor submission in response to a request for information under this section to enter a contract unless the terms of the submission are later included in a vendor's response to a formal solicitation, as defined in Minnesota Statutes, section 16C.02, subdivision 7.

(e) No later than August 1, 2018, the commissioner must submit a report to the committee and the information technology auditor that summarizes the responses and information received from qualified vendors under this section.

EFFECTIVE DATE.

This section is effective the day following final enactment.

Sec. 3. **INFORMATION TECHNOLOGY AUDITOR; MNLARS ASSESSMENTS.**

Subdivision 1. **Appointment.**

The legislative auditor must appoint an information technology auditor to actively monitor and report on the development and implementation of the Minnesota Licensing and Registration System (MNLARS). At a minimum, the person appointed to this position must have expertise in .NET software development and must have project management experience.

Subd. 2. **Duties.**

(a) The information technology auditor must conduct an assessment of MNLARS. Upon completion, the assessment must be provided to the MNLARS Steering Committee established under section 4. At a minimum, the assessment must include:

(1) a technical assessment of MNLARS;

(2) an assessment on the feasibility of the MNLARS Project Roadmap proposed by the Department of Public Safety and the Office of MN.IT Services in January 2018, and the project timeline under section 2, subdivision 2;

(3) an assessment of estimated funding needs for the continued development, operations, and maintenance of MNLARS; and

(4) an assessment of process changes and business workflows for auto dealers and deputy registrars.

(b) Each quarter, the information technology auditor must report to the MNLARS Steering Committee whether the commissioner of public safety and the state chief information officer are:

(1) meeting the deadlines and performance measures in the project timeline required in section 2, subdivision 2; and

(2) in compliance with the plans required in section 2, subdivision 2.

(c) The quarterly reports under paragraph (b) must be submitted to the committee between 20 and 30 days before the start of each quarter.

EFFECTIVE DATE.

This section is effective the day following final enactment.

Sec. 4. **MNLARS STEERING COMMITTEE; QUARTERLY FUNDING REVIEW.**

Subdivision 1. **Definitions.**

(a) For purposes of this section, the following terms have the meanings given.

(b) "Committee" means the MNLARS Steering Committee established in this section.

(c) "Commissioner" means the commissioner of management and budget or the commissioner's designee.

(d) "MNLARS" means the driver and vehicle information system known as the Minnesota Licensing and Registration System.

(e) "Information technology auditor" means the individual appointed by the legislative auditor pursuant to section 3, subdivision 1.

(f) "Quarter" means a three-month period starting on July 1, October 1, January 1, or April 1, in fiscal year 2019.

Subd. 2. **MNLARS Steering Committee; membership.**

(a) A MNLARS Steering Committee is established. The committee is made up of the following members:

(1) the chair of the senate Finance Committee, or a senator appointed by the chair of the senate Finance Committee;

(2) the chair and ranking minority member of the senate committee with jurisdiction over transportation finance;

(3) the chair of the house of representatives Ways and Means Committee, or a member of the house of representatives appointed by the chair of the house of representatives Ways and Means Committee; and

(4) the chair and ranking minority member of the house of representatives committee with jurisdiction over transportation finance.

Subd. 3. **Meetings.**

(a) The senate chair of the committee with jurisdiction over transportation finance must convene the initial meeting of the committee by May 1, 2018.

(b) The chairs of the house of representatives and senate committees with jurisdiction over transportation finance serve as cochairs of the committee.

(c) The committee must meet at least once each quarter.

(d) The committee is subject to Minnesota Statutes, section 3.055, except that a member may vote by submitting a written statement indicating how the member votes on a motion. This written statement must be treated in the same manner as the votes of the members present at the meeting. The vote must be submitted to all members prior to the start of the meeting at which the vote will take place.

(e) The Legislative Coordinating Commission must provide meeting space and administrative support for the committee.

Subd. 4. **Committee duties.**

(a) The committee must review the proposed timeline, including deadlines and performance measures, and the proposed plans submitted under section 2, subdivision 2.

The committee may request that the commissioner of public safety and the state chief information officer make changes to the timeline and plans. Prior to reviewing the July 1 quarterly allotment, the committee must approve a timeline and plans. The cochairs must transmit copies of the timeline and plans to the information technology auditor.

(b) The committee must review (1) the progress reports submitted under section 2, subdivision 3; (2) reports from the information technology auditor under section 3, subdivision 2; and (3) quarterly appropriations as provided in subdivision 5.

(c) The committee may contract with, hire, or otherwise consult with any individual to assist the committee with its duties.

Subd. 5. **Review of appropriations.**

(a) Funds appropriated in fiscal year 2019 to the commissioner of public safety for MNLARS are divided into four equal quarters. The commissioner must allot a quarter of the funds on July 1, October 1, January 1, and April 1, unless otherwise directed by the committee under this section. Twenty days prior to the start of a quarter, the commissioner must submit a proposal to allot funds for MNLARS to the members of the committee for review and recommendation.

(b) The committee members have 20 days from the receipt of a proposal to determine whether the Department of Public Safety and the Office of MN.IT Services have met the deadlines and performance measures established in section 2, subdivision 2. If during the 20-day review period a majority of the committee members affirmatively votes to:

(1) defer, reduce, or further condition the next quarterly allotment based on the failure to meet deadlines or performance measures; or

(2) recommend further review to determine whether deadlines and performance measures have been met,

the commissioner must defer, reduce, or condition the quarterly funds as provided in the committee vote. If the committee votes to recommend further review, the commissioner must defer the next quarterly payment.

(c) A committee member, by written notice to the commissioner, may withdraw the member's affirmative vote made under paragraph (b) within 20 days of the vote. If within 20 days of the vote one or more members withdraw an affirmative vote under this paragraph so that three or fewer affirmative votes remain, the commissioner may allot the quarterly funds to the commissioner of public safety for MNLARS.

(d) If a quarterly allotment is not made under paragraph (a) or (b), the commissioner must allot to the commissioner of public safety an amount sufficient to fund an additional 30 days for contracted technical staff working on MNLARS.

Subd. 6. **Resubmission of proposal.**

If a proposed allotment is deferred under subdivision 5, the commissioner may submit proposed legislation to the chairs of the house of representatives Ways and Means Committee and the senate Finance Committee for consideration during the 2019 legislative session.

EFFECTIVE DATE; APPLICATION.

This section is effective the day following final enactment. Subdivisions 4 and 5 apply to any money appropriated in fiscal year 2019 for MNLARS in this act or any subsequent act.

Sec. 5. **REAL ID ACT EXTENSIONS.**

The commissioner of public safety must coordinate with the governor to seek any extensions available from the United States Department of Homeland Security with respect to federal enforcement of the REAL ID Act of 2005, Public Law 109-13, Division B. The commissioner must make all feasible efforts to promptly obtain extensions.

EFFECTIVE DATE.

This section is effective the day following final enactment.

Sec. 6. **EXPIRATION.**

Section 2, subdivisions 2 to 4, and section 4, expire upon full implementation of MNLARS, which includes but is not limited to resolution of all significant defects, implementation of all functionality gaps identified in the project timeline, and decommissioning of the legacy driver and vehicle services information technology system. The MNLARS Steering Committee must determine when MNLARS is fully implemented.

Sec. 7. **SEVERABILITY.**

If any provision of sections 1 to 6 or its application to any person or circumstances is held invalid, the invalidity does not affect other provisions or applications of sections 1 to 6 that can be given effect without the invalid provision or application. The provisions of this section are severable.

EFFECTIVE DATE.

This section is effective the day following final enactment.

Presented to the governor March 22, 2018

Signed by the governor March 22, 2018, 6:19 p.m.

ATTACHMENT B

MINNESOTA DEPARTMENT OF PUBLIC SAFETY

REQUEST FOR INFORMATION
for
Replacement of
Motor Vehicle Information System

Issue Date: April 30, 2018

Question Submission Deadline: 12:00 p.m. (noon) Central Time; Tuesday, May 8, 2018

Response Submission Deadline: 4:00 p.m. Central Time; Thursday, May 31, 2018

REQUEST FOR INFORMATION

Minnesota Department of Public Safety

A. Purpose

The Department of Public Safety (DPS), on behalf of its Driver and Vehicle Services division (DVS), is soliciting information to determine the feasibility of contracting with a private vendor to design, develop, deploy, transition, and maintain a new motor vehicle information system.

The purpose of this Request for Information (RFI) is to identify and obtain information from qualified industry leaders that have the ability, capacity and experience to replace in a timely manner the functionality of the State's former legacy motor vehicle information system, a mainframe system, and its present system known as MNLARS, a web-based system.

The required transition of functionality corresponds to: vehicle title and registration; dealer licensing; interstate vehicle title and registration (called IRP/IFTA); license plate and sticker inventory management that interfaces with supply chain stakeholders; temporary commercial vehicle permits; and corresponding financial processes.

DPS intends to invite qualified vendors that properly respond to this RFI to present their solutions and technical framework at the DPS headquarters during June 2018.

NOTE: This Request for Information does not obligate the State or the Department of Public Safety to award a contract or complete the identified project.

B. Goals

The State's goal is to implement a cost-effective web-based motor vehicle information system that provides a stable, reliable, secure, consumer- and user-friendly, and flexible platform that enables DPS to expand functionality to meet the changing business and technological needs of the State and its stakeholders, e.g. licensed motor vehicle dealers, deputy registrars, et al., and to increase and improve reporting from the system.

Other requirements of the new system must include:

- Ability to interface with a new driver's license system which includes federal Real ID requirements currently under development by Fast Enterprises, LLC, which will be deployed no later than October 2018;
- Ability to conduct system and user interfaces with current and future third-party vendors;
- Being intuitive and user-friendly for deputy registrars, licensed automobile dealers and DVS staff;
- Efficient and time-sensitive implementation; and
- Containing functionality and features that substantially match those of the former legacy motor vehicle system prior to implementation of MNLARS while maintaining the integrity of a modern system of records.

C. Background

The existing system is a mission-critical enterprise system that maintains motor vehicle data. The system supports the collection of fees and taxes totaling approximately $1.6 billion annually related to motor vehicle transactions.

MNLARS supports 3,576 access units (defined as an organization or other entity that provides services) which include:

- the Driver and Vehicle Services division;
- 175 appointed deputy registrars providing motor vehicle services to customers;
- 2,889 licensed motor vehicle dealers; and
- 512 other organizations such as government entities (e.g. Minnesota Department of Revenue; Minnesota courts, county and city attorneys; etc.) and paid access users. These interactions include system users as well as business-to-business interactions.

MNLARS supports 9,015 individual users which include:
- 1,797 Deputy Registrar employees;
- 4,462 licensed dealership employees; and
- 2,756 other organization employees such as state and local government employees, licensed towing company employees, insurance company employees, and lending company employees.

MNLARS supports:
- Over 33,000 inquiries from law enforcement inquiries per day through an interface with the Minnesota Bureau of Criminal Apprehension (MBCA).

Annually, DVS supports:
- Over 5,900 interstate motor carrier fuel licenses and vehicle registrations;
- Over 4,400,000 annual citizen telephone calls;
- Over 1,400,000 annual license plates issued;
- Over, 4,000 auto dealer license issues and renewals;
- Over 2,300 auto dealer inspections; and
- Over 15,000 motor vehicle inspections.

The current MNLARS motor vehicle system replaced the motor vehicle mainframe legacy system.

D. Questions

Vendors who have questions regarding this Request for Information must submit them via email to:

Kevin Donnan-Marsh
Department of Public Safety Contracts Officer
Email address: kevin.donnan-marsh@state.mn.us
Email subject/title line: Motor Vehicle RFI

Questions must be submitted no later than 12:00 p.m. (noon) Central Time on Tuesday, May 8, 2018. An addendum to this RFI will be issued no later than Tuesday, May 15, 2018, providing answers to questions received by noon on May 8th.

Questions must be emailed to the individual above. Questions submitted by other means, e.g. telephone, regular mail, fax, etc., or submitted to persons other than the above will not be answered. Other state personnel are NOT authorized to respond to questions.

E. Vendor Submissions

Responses must be submitted in writing no later than 4:00 p.m. Central Time on Thursday, May 31, 2018. All submissions must be addressed to:

Kevin Donnan-Marsh, DPS Contracts Officer
Department of Public Safety
445 Minnesota Street
Saint Paul, MN 55101
Telephone Number: 651.201.7006

Late submissions, at the discretion of the State and DPS, may not be addressed.

DPS is not liable for any costs incurred by vendors in providing information, submitting responses, or attending meetings directly or indirectly related to this RFI. Vendors are responsible for all costs associated with information, visits and personnel furnished to comply with this RFI or corresponding request.

F. Submission Content

Responses must include answers to all of the "Framework Vendor" questions and description requests as listed in the "Vendor Input" section below.

The RFI response must not exceed a total of 30 pages.

Vendors should strive to demonstrate their view and understanding of each question.

Submit four paper copies of the response. One copy must be signed in ink by an authorized member of the firm, and marked "Original." Responses must be sealed in mailing envelopes or packages with the responder's name and address written on the outside, and clearly marked "Motor Vehicle RFI Replacement System."

The proposal must also be submitted on a Microsoft Windows readable CD-ROM in an Adobe Acrobat PDF or Microsoft Word format.

Vendor Input

Framework Vendors

A "Framework Vendor" is defined as having an existing motor vehicle software solution. DPS is seeking the following information from Framework Vendors:

1. Describe your Motor Vehicle framework.
   a. What business functions does your framework cover?
   b. Describe the technical architecture behind your code base/framework, your experience with this code base, and the platforms, software languages, databases, and other key technologies used by/with your code base/framework.
   c. What database(s) does your framework use? What others can it use?
      i. What is the licensing model for the database?
   d. In what states have you fully implemented your framework? Fully or partially?
   e. In what states, if applicable, are you in the process of implementing your framework?
   f. What investment has your company made in your framework? Or was your framework developed specifically for another state? Did you invest in your framework independently of a contract with a state?
   g. What are your plans for future investment in your framework?
   h. What browsers do your framework support?
   i. What interfaces with standard government agencies/NGO organizations does your approach already support?
   j. What is the average number of concurrent users in other state implementations?
   k. Does your implementation have any third-party SAS dependencies?
   l. Describe how your framework provides data to third-party consumers.
      i. What protocols are used?
   m. Describe how your framework handles the consumption of third-party data feeds.
   n. Describe how your framework supports self-service for anonymous users.
   o. Describe how your framework supports review and approval workflows.

2. Describe the authentication/authorization/user-identity management features in your code base/framework.
   a. If not within the framework, with what products does your framework interact?

b. Minnesota has a centrally-managed enterprise IAM implementation. Characterize the feasibility of leveraging that system for authentication and authorization.

3. Describe your use of third-party COTS products for the following capabilities:
   a. Rules definition and management
   b. Work flow definition and management
   c. Case management
   d. Reporting
   e. Document management
   f. Telephony & IVR
   g. E-forms
   h. E-learning
   i. Financial accounting and reporting
   j. Inventory management
   k. Change, Release, and Service Desk Management

4. Describe how your framework handles Federal mandates.

5. Describe your approach (architecture and design considerations) for integration with internal (e.g. State financial system) and external (e.g. AAMVA) systems to a DMV system.

6. Describe how your framework accommodates ADA requirements.

7. Identify whether your code base/framework supports multiple languages (e.g. English and Spanish). How is this supported by your code base/framework?
   a. If multiple languages are supported, how are translations managed?

8. Describe your typical point-of-service hardware configuration.

9. Describe your requirements/expectations regarding network or management of the computing infrastructure at the point of service (e.g. Must all workstations be members of an Active Directory Doman?).

10. Describe the production deployment infrastructure options, including which components can be cloud-hosted, and the scalability characteristics of the implementation including but not limited to:
    a. Database
    b. Load Balancers
    c. Application Tier
    d. Web Tier
    e. Networking and/or bandwith constraints
    f. Document management

11. Describe the underlying approach to your framework (e.g. customer centric, vehicle centric, etc.).

12. What software third-party licenses, products or services would Minnesota need to acquire or possess in order to use your framework. In particular, what third-party components does your framework rely on?

13. Describe your experience with release implementations with systems of this size.

14. Describe the development methodology(ies) that you would use for this system.

15. Based on your experience with other states, what is the feasibility of combining a legacy mainframe system previously used with a current web-based system?

16. What is the typical time frame for the design, development, and implementation of a motor vehicle information system similar in size? For example, based on your average customer's motor vehicle system, what is a realistic, estimated timeline or schedule from the time a contract is signed through implementation and troubleshooting?

17. What preparation or planning have you seen States complete - or not complete - prior to starting an implementation project and how did it impact the project?

18. From your perspective, what could be included in a RFP to contribute to project success?

19. If DPS decides to issue a RFP, would your company be interested submitting a proposal? If not, why not?

20. Describe your approach to software releases.

21. Describe, based on your experience with other States, a realistic estimate of effective total cost of ownership.
    a. Is ongoing support, e.g. maintenance, from your organization required/recommended, and what is the expected/recommended size of that staff and average hourly rates? Can that cost be reduced by knowledge transfer to the state's IT staff?
    b. What is the average or estimated cost of development or customization of an existing system?
    c. What are ongoing licensing fees for your framework, including the frequency, current cost(s) and duration?
    d. What is the nature and estimated costs of required or recommended non-production environments?
    e. What is the estimated, average run cost for a year on a typical deployment?

22. Describe and identify, and in consideration of your response to Question 21, a breakdown of costs for vehicle services components and functionality, including potential and anticipated costs of integrating a vehicle services information system with a separately developed driver services information system.

23. Describe the recommended size and composition of the state's team supporting the project including DVS business staff, project managers, business analysts, systems analysts, software developers, and systems engineer.

24. Describe the nature of your quality assurance program.
    a. Describe your testing methodology.
    b. Describe the extent to which your testing is automated.

25. Describe your approach to data migration.
    a. What challenges and approaches do you recommend for data conversion and cleansing?
    b. Describe how you ensure the converted data works in the target system.
    c. Describe how you handle the migration of non-relational data such as documents.

26. Describe how your framework supports customization.
    a. Does it support No-Code or business user customization?
    b. Can end users perform customizations or is it offered via professional services?

27. Describe your post go-live support capability.

G. Disposition of Responses

All materials submitted in response to this RFI will become property of the State of Minnesota and will not be returned. The materials will become public record in accordance with Minnesota Statutes, Chapter 13, the Minnesota Government Data Practices Act.

The State recommends responders do not submit materials or include information they consider trade secrets.

The State will not consider prices submitted by the responder to be proprietary or trade secret materials.

If DVS should decide to issue an RFP and award a contract based on any information received from responses to this RFI, all public information, including the identity of the responders, will be disclosed upon request subsequent to an executed contract.

ATTACHMENT C

Request for Information (RFI) ADDENDUM

Addendum Number: **1** Date of Addendum: **May 15, 2018**

Response Due Date and Time: **Thursday, May 31, 2018; 4:00 p.m. Central Time**

Revised Due Date and Time: **Not applicable. Same as above.**

Agency: **Department of Public Safety; Driver and Vehicles Services Division**

Title: **Replacement of Motor Vehicle Information System**

SCOPE OF ADDENDUM PART 1 / QUESTIONS AND ANSWERS

The following are questions received by **12:00 p.m. (noon) Central Time on Tuesday, May 8, 2018** and their corresponding answers.

RFI Questions

1. **Question:** May companies located outside the United States, e.g. Canada, India, etc., respond?

   DPS Response: Any company, regardless of its location, may respond to this Request for Information (RFI).

2. **Question:** Will a responder be required to attend meetings in Saint Paul?

   DPS Response: As stated on page 2 of the RFI, "DPS intends to invite qualified vendors that properly respond to this RFI to present their solutions and technical framework at the DPS headquarters during June 2018." If a company is invited to attend, it is the State's expectation that the responder will present in person in Saint Paul.

3. **Question:** Will a responder be allowed to perform tasks related to the RFP outside the USA?

   DPS Response: This document is a Request for Information (RFI), not a Request for Proposals (RFP) solicitation document. If, however, the State proceeds with an RFP, due to access to private data, a vendor awarded a contract will be required to complete its duties and tasks within the USA and US territories.

4. **Question:** Can we submit proposals via email?

   DPS Response: No. As stated on pages 3 and 4 of the RFI, submissions must be submitted in paper form. Please read Section E, Vendor Submissions, and Section F, Submission Content, for more information.

5. **Question:** What is the estimated cost of the Motor Vehicle Replacement project?

   DPS Response: The State has not estimated a cost to replace the functionality of the State's former legacy motor vehicle information system and its present system known as MNLARS. Responders to the RFI are encouraged to provide "best information" cost

estimates based on their experience replacing other clients' systems that are similar in size, scope and complexity.

6. **Question:** Has DPS allocated funding for the Motor Vehicle Replacement project yet? If so, what is its funding source, i.e. state appropriation, state and/or federal grant, etc.? If no funding is secured, what sources will be sought and when? If utilizing a grant, would DPS be able to specify which one?

   DPS Response: No. While no funding has been identified or secured at the time of this RFI, DPS anticipates – but cannot guarantee – that state appropriations may be allocated to the project in the future.

7. **Question:** If a subsequent RFP is released, when does DPS anticipate releasing the solicitation?

   DPS Response: There is no anticipated date at this time for releasing an RFP.

8. **Question:** What is the proposed implementation date for a solution?

   DPS Response: At this time, DPS cannot project an implementation date. Any proposed date is dependent on responses during this RFI process and potential issuance of an RFP. If DPS proceeds to issue an RFP, the selected vendor should expect to fully develop, test, and implement a replacement system within two years of executing a contract.

9. **Question:** Does DPS need to replace or upgrade any of the integrated systems in the next 5 years? If so, which system(s) and when?

   DPS Response: At this time, DPS does not have any information available to share regarding replacement or upgrade to its integrated systems.

10. **Question:** What vendor provides the current Motor Vehicle System? When does the contract expire?

    DPS Response: The State's IT agency, Minnesota IT Services (a/k/a MNIT Services), supports the current motor vehicle system. There is, therefore, no contract to expire.

11. **Question:** Does DPS anticipate any professional or consulting services (i.e. project planning/oversight, PM, QA, IV&V, staff augmentation, implementation services, etc.) being required through separate procurements to accomplish this effort? If so, what service(s) does DPS desire and how do they anticipate procuring the service(s)?

    DPS Response: DPS anticipates that a vendor awarded a contract will provide a portfolio of comprehensive services including but not limited to project management, IT technical development, quality assurance, testing and training needed to implement its solution.

12. **Question:** Does the vendor implement the drivers license system or just interface?

    DPS Response: A vendor awarded a contract should plan to interface the motor vehicle system with the drivers license system.

13. **Question:** What are the possible interfaces Minnesota is expecting a vendor to build?

    DPS Response: Attached is a list of the interfaces that DPS expects a vendor to build.

    Interface list as of May 10 2018.docx

14. **Question:** Is there any workflow in TnR or Dealer license?

    DPS Response: For planning, a vendor awarded a contract will be expected to develop and deploy a dealer licensing management system. The system would be one component of a larger comprehensive solution that includes, but not limited to, motor vehicle registrations, motor vehicle registration renewals, motor vehicle title issuance, IRP, IFTA, and inventory management.

15. **Question:** Does DPS expect the inventory system for this project?

    DPS Response: Yes. A vendor awarded a contract will be expected to develop and deploy an inventory management system that includes the Department of Public Safety, the Minnesota Department of Corrections, and the 174 deputy registrar offices. See Question 14 above.

16. **Question:** Is there any specific requirement on title printing?

    DPS Response: Yes. A vendor awarded a contract will be expected to develop and deploy a title printing process that include options for centralized printing at DPS and decentralized printing at each of the 174 deputy registrar offices.

17. **Question:** Will there be a common finance and customer database for all systems?

    DPS Response: A common finance and customer database is highly desirable but is dependent upon the ability of a motor vehicle solution to interface with the drivers' license system currently being implemented. If the State issues a subsequent RFP, additional information will be provided at that time.

18. **Question:** Is there any requirement for the title suspension process?

    DPS Response: Yes. A vendor awarded a contract will be expected to develop a process that allows for the suspension or revocation of a motor vehicle title.

ACKNOWLEDGEMENT OF ADDENDUM 1

This addendum shall become part of the RFI and must be returned with, or acknowledged in, the Response.

RESPONDER NAME:
SIGNATURE:
TITLE:
DATE:

ATTACHMENT D

Business Information Systems

Minnesota Department of Safety – Original

Motor Vehicle RFI Replacement System
Proposal Opening Date: May 31, 2018
Proposal Opening Time: 4:00 P.M. CST

Stoney M. Hale II
5/29/2018

Purpose

BIS is proposing to provide Minnesota Department of Public Safety a solution to replace the functionality of the State's former legacy motor vehicle mainframe vehicle information system and it's present system MNLARS. BIS is a leader in State and Local Government software. We provide our Vehicle Title and Registration System (VTRS) the State of Tennessee.

We provide our Tennessee County Clerk software (motor vehicle, business tax, boat tax, marriage license, receipting, general ledger, employee management, and statistic) to all 95 counties in Tennessee.

We provide land record management software to half the Register of Deeds in Tennessee, and numerous counties in Arkansas, North Carolina, South Carolina, Kentucky, and Virginia.

We currently have a full State wide print on demand solution in Tennessee. We installed this solution in 2013 and currently have installed and support 935 Print on Demand Decal Printers. Roughly 5 million registrations are printed annually.

We also provide all 95 counties in Tennessee our entire Motor Vehicle software as well as the State of Tennessee Motor Vehicle software.

Implemented scanning of all motor vehicle support documents that are electronically recorded and sent to the State of Tennessee from the local counties.

Implemented state wide Print on Demand registrations/decals.

Implemented ACH payment processing for the counties to submit payments electronically to the State of Tennessee for fees owed.

Implemented Print on Demand Dealer Drive-Out Tags. This system allows dealers to key owner/vehicle information the EZ Dealer Tags software and issue a print on demand drive-out tag. This eliminates the dealer from having to pre-purchase card stock drive-out tags. Thus dealers will not have to keep inventory nor transaction logs. The system provides numerous reports for this. All of the data keyed by the dealers is electronically transmitted to the Clerk's office. The County Clerks of Tennessee can then pull the data up and process the transaction to issue a title. Reducing transaction times by not having to rekey information.

Law enforcement can scan the barcodes on the dealer drive-out tags to validate.

A. Vendor Input

1.) Describe your Motor Vehicle framework.

a) What business functions does your framework cover?

BIS provides our Vehicle Title and Registration System (VTRS) to the State of Tennessee. This is a real-time vehicle titling and registration system.

The contract with BIS and the State of Tennessee officially started **4/1/2015** and was live before **3/1/2017**. We also implemented many process improvements before the entire project was live throughout the 24 months. The enhancements we developed with the implementation of VTRS, improved the States Motor Vehicle Services Department efficiency 5 to 1. The State of Tennessee process 6.5 million vehicle registrations per year.

The VTRS services we have to offer are as follow:

- Abandoned Vehicles
  - Process and store the Request for Verification Ownership on Vehicles Found Abandoned/Immobile or Unattended Form
- Address Entry and Maintenance
  - User interface for performing address maintenance
- Auditing/Logging Features
  - Log system interactions including user, day, time, etc.
  - Log Add/Change/Deletes

- Data Archive/Purge
  - Application/interface for the operations of archiving and purging motor vehicle data
- Electronic Insurance Verification System (EIVS)
  - is an electronic insurance verification system, built for the State of Tennessee. The purpose of the system is to identify uninsured motorist, and help lower that number.
- EZTag
  - is our web-based dealer drive out software. This like print-on-demand vehicle registrations eliminate dealers having pre-printed card stock to track for inventory. Dealer keys all necessary information into the EZTag system and that information is made available to the county offices that will be processing the title and registration. To speed up the transaction being processed, since most data has already been keyed by the dealership. Also, if law enforcement pulls over a vehicle the information on the dealer drive out tag is available through the State's Ties system.
-
- Fleet/Dealer Work
  - Provide POS for Fleet and Dealer transactions
  - Batch processing
- Fair Market Value
  - Utilize Kelly Blue Book or Other to obtain the fair market value of a vehicle based on the supplied VIN
  - Communication via web services
- Inquiry/Search
  - Look-up Vehicle History
  - Lookup by Date and/or User
  - Log Inquiries
- Inventory (Controlled Stock)
  - Class Maintenance
  - Plate Inventory
    - JS Codes for New Class
    - Plate Number Sequencing Program
      - Alpha-numeric structure of a plate class/issue year
    - Ordering Program to automate communication with TRICOR
    - Tag Tracking: Pending, Complete, Shipped
    - Entering/Inserting Inventory into VTRS System once received/shipped
  - Title Inventory
  - Decal Inventory
  - Specialty Plates
  - Placards
  - Forms
  - Dealer Drive Out Tags

- Reports on all current inventory
- Lien Work
  - Noting of Lien
  - Discharge of Lien
  - Printing Titles
- Other Mail Room Work
  - Renewal/RO Error Processing
  - Rejection Letters
  - Image Retrieval
  - County Inventory Requests
- Personalized Plates
  - Application Processing
  - Check Availability
  - Check for Appropriateness
    - Urban Dictionary and Webster's
    - Query Local Database
  - Acceptance/Rejections
  - Ordering
- Rejections/Incomplete Transaction Work
  - Allow to Suspend/Save an Incomplete Transaction
  - Generate Proper Correspondence (Rejection Letter)
  - Retrieve a Saved Incomplete Record
- Registrations
  - New real-time vehicle titling and registration. Currently Tennessee has about 6,500,000 active registrations. VTRS handles all the titling and registrations.
  - Renewals in-house, online, and self-service KIOSK
    - Yearly (Staggered or Non-Staggered)
  - Permanent
  - Types: Motor Vehicle, All-Terrain, Snowmobiles, Utility Trailers, Low-speed, Recreational, Custom-Built, Scooter/Mopeds, Motorcycles, Boats
- Refunds
  - Improve Workflow
  - Provide Reports
- Reporting Services
  - System Access Reports
  - Audit Reports
  - Financial Reports/Fund Reconciliation
    - Balance Sheet/Report
    - Income
    - Cash Flows
  - Inventory Reports
  - Inquiry Reports

    - User Reports
    - Miscellaneous Reports
- Title Work
    - De-title (Mobile Homes)
    - Duplicate Title
    - Name Change
    - Rebuilt Title
    - Salvage Title
    - Title for Existing Vehicle
    - Title for New Vehicle
    - Title Transfers
    - Title Surrender
    - Trailer Title
- Scanning / Imaging
    - Centralized imaging system. When transactions are performed at various counties throughout the State of Tennessee all of the supporting documents are scanned and transmitted to our centralized location. The images are searchable by all counties and the State offices.

- Specialized Applications
    - Government Vehicles
        - Registrations and Plates
    - Undercover Vehicles
        - Registrations and Plates
        - Handle with Paramount Security
        - Log all Inquiries/Interactions
        - Monitor
        - Send Alerts

b. Describe the technical architecture behind your code base/framework, your experience with this code base, and the platforms, software languages, databases, and other key technologies used by/with your code base/framework.

TECHNOLOGY ARCHITECTURE

Domain: Data

Discipline: Database Storage

- **Technology Area:** Database Management System

[redacted]	Emerging
	Current
	Current
	Current
	Phasing Out

Domain: Platform

Discipline: Hardware

- **Technology Area:** Server Hardware

[redacted]	Current
	Phasing Out
	Deprecated

Discipline: Operating Systems

- **Technology Area:** Application/Database Server Operating System

[redacted]	Current
	Current
	Current

Domain: Security

Discipline: Data Confidentiality and Integrity

- **Technology Area:** Encryption Controls

[redacted]	Current
	Current

Discipline: Authentication

- **Technology Area:** Certificates

[redacted]	Current
	Current

Discipline: Authorization

- **Technology Area:** Directory

[redacted]	Current
	Phasing Out

Discipline: Compliance Policies

- **Technology Area:** Firewall

[redacted]	Emerging
	Current

[redacted]	Current
	Phasing Out

- **Technology Area:** Intrusion Detection

[redacted]	Current

- **Technology Area:** Virus Protection

[redacted]	Current

Domain: Information

Discipline: Business Intelligence

- **Technology Area:** Reporting Services

[redacted]	Current
	Phasing Out

Domain: Application

Discipline: Application Access

- **Technology Area:** Application Server

[redacted]	Current

❖ **Technology Area:** Web Browser

[redacted]	Current
	Current
	Current
	Current

❖ **Technology Area:** Web Server

[redacted]	Current

Discipline: Application Configuration Management

❖ **Technology Area:** Application Version Control

[redacted]	Current

Discipline: Application Development

❖ **Technology Area:** Languages

[redacted]	Current
	Current
	Current
	Phasing Out
	Emerging
	Current
	Current
	Current
	Current
	Current

[redacted]	Current

c. **What database(s) does your framework use?**
[redacted] in production. [redacted] in testing environment.

What others can it use?
We have a very scalable design and can support other databases

What is the licensing model for the database?
[redacted] does not require licensing.

d. **In what States have you fully implemented your framework? Fully or partially?**
BIS has implemented our VTRS framework solution fully in the State of Tennessee.

e. **In what states, if applicable, are you in the process of implementing your framework?**
BIS currently is not in the process of implementing our framework in other states.

f. **What investment has your company made in your framework? Or was your framework developed specifically for another state? Did you invest in your framework independently of a contract with a state?**
BIS VTRS framework was developed specifically for the State of Tennessee, but we developed it in a way to be scalable to other state's needs. So we are not locked down to how it was developed for the State of Tennessee.

g. **What are your future plans for investment in your framework?**
We plan to continuously improve, add features, and use the best tools available for our framework.

h. **What browsers do your framework support?**

The components of our solution which provide a web interface support any HTML5 compliant browser.

i. **What interfaces with standard government agencies/NGO organizations does your approach already support?**
NCIC for stolen vehicle check prior to state Title issuance. Data provider to TIES/NCIC for law enforcement inquiry by plate/VIN/etc. General API access used by various State agencies. We designed our Electronic Insurance Verification System (EIVS) according to the IICMVA model. Utilizing both web-services and flat files.

j. **What is the average number of concurrent users in other state implementations?**
VTRS has 2000+ simultaneous users throughout the State of Tennessee.

k. **Does your implementation have any third-party SAS dependencies?**
BIS implementation does not have any third party SAS dependencies.

l. **Describe how your framework provides data to third-party consumers. What protocols are used?**
We provide [redacted] to access data.

m. **Describe how your framework handles the consumption of third-party data feeds.**
Third parties can [redacted]

n. **Describe how your framework supports self-service for anonymous users.**
BIS KIOSK and online renewals have been designed in an easy secure way to allow anonymous users to renew car tags online or in-house at an unmanned KIOSK.

o. **Describe how your framework supports review and approval workflows.**
VTRS uses work grids and work groups for review and approval.

2.) **Describe the authentication/authorization/user-identify management features in your code base/framework.**

[redacted]

a. **If not within the framework, with what products does your framework interact?**

[redacted]

b. **Minnesota has a centrally-managed enterprise IAM implementation. Characterize the feasibility of leveraging that system for authentication and authorization.**

If the LDAP is query-able we'd be able to basically immediately utilize the centrally-managed enterprise IAM. If not, then we would need more documentation to accomplish this.

3.) Describe your use of third-party Commercial off the shelf (COTS) products for the following capabilities:

a. Rules definition and management.
b. Work flow definition and management
c. Case management
d. Reporting
e. Document management
f. Telephony & IVR
g. E-forms
h. E-learning
i. Financial accounting and reporting
j. Inventory management
k. Change, Release, and Service Desk Management.

We do not use any third party COTS for these.

4.) Describe how your software handles federal mandates.

All modifications are reviewed, estimated for time and cost, and approved before any changes are made.

5.) Describe your approach (architecture and design considerations) for integration with internal (e.g. State financial system) and external (e.g. AAMVA) systems to a DMV system.
We utilize automated scripts to create and consume flat data files. We use APIs for real-time interactions.

6.) Describe how your framework accommodates ADA requirements.
BIS KIOSK are designed to fully accommodate ADA requirements. All of our VTRS screens have the capability to be resized for each user.

7.) Identify whether your code base/framework supports multiple languages (e.g. English and Spanish).
How is this supported by your code base/framework?
a. If multiple languages are supported, how are translations managed?
Currently is supported by self-service online registration renewal website via use of language translation service.

8.) Describe your typical point of service hardware configuration.
A typical workstation running a modern version of Microsoft Windows, Datamax thermal printer to print decals, and laser printer to print various forms. Then optional peripherals to support barcode scanning, EMV card readers, and scanners to scan supporting documents of the motor vehicle transaction.

9.) Describe your requirements/expectations regarding network or management of the computing infrastructure at the point of service (e.g. must all workstations be members of an Active Directory Domain?)
Our VTRS system is flexible and we are able to use Active Directory Domain. This wasn't a requirement for Tennessee VTRS.

10.) Describe the production deployment infrastructure options, including which components can be cloud-hosted, and the scalability characteristics of the implementation including but not limited to:
Our design allows for on-premises or cloud-based deployments either one.

a. **Database**
A multiple data-center clustered environment is recommended. Such that failure of a single database server, or data-center, does not bring the system down.

b. **Load Balancers**

Load balancers/traffic directors which route both external clients to application servers, and application servers to database servers, is recommended.

c. Application Tier
Hosted on >1 server so no single point-of-failure. Zero down-time upgrades are supported.

d. Web Tier
In Tennessee we host the online renewal site. So if you go to tncountyclerk.com you can view the online renewal website. We also, have built more customized sites for individual counties such as nashvilleclerk.com that we built for Davidson County Clerk.

e. Network and/or bandwidth constraints
Hosted on more than 1 server so no single point-of-failure. Zero down-time upgrades are supported.

f. Document management
Integrated scanning/document management system with web and thick client access.

11.) Describe the underlying approach to your framework (e.g. customer centric, vehicle centric, etc.).
VTRS underlying approach is Vehicle centric.

12.) What software third-party licenses, products or services would Minnesota need to acquire or possess in order to use your framework. In particular, what third-party components does your framework rely on?
BIS VTRS system does not require any third-party license, products or services Minnesota would need to acquire or possess in order to use our framework.

13.) Describe your experience with release implementations with systems with this size.
We utilize semantic versioning. Zero down-time deploy capable. Tier-4 shared nothing approach. Pre-production and production environments.

14.) Describe the development methodology(ies) that you would use for this system.

In short, the BIS Software Development Methodology depends on certain factors and ultimately is a mix (hybrid) of Waterfall and Agile with using Atern principles.

15.) Based on your experience with other states, what is the feasibility of combining a legacy mainframe system previously used with a current web-based system?

We did not combine, we replaced. Performance increased, downtime decreased substantially.

16.) What is the typical time frame for the design, development, and implementation of a motor vehicle information system similar in size? For example, based on your average customer's motor vehicle system, what is a realistic, estimated timeline or schedule from the time a contract is signed through implementation and troubleshooting?

We implemented VTRS in the State of Tennessee within 24 months.

17.) What preparation or planning have you seen States complete-or not complete - prior to starting an implementation project and how did it impact the project?

In Tennessee numerous training classes were conducted and a training environment were established for users to double key transactions. The only other thing of replacing a legacy system is analyzing and identifying all functions that need to be replaced. A constant risk of a service that was not performed often would be missed. So we had to constantly strive to make sure we covered every process and met with all departments.

18.) From your perspective, what could be included in a RFP to contribute to project success?

By not allowing a solution combining a legacy mainframe system previously used with a current web-based system.

19.) If DPS decides to issue a RFP, would your company be interested submitting a proposal? If not, why not?

Yes, BIS would submit a proposal.

20.) Describe your approach to software releases.
We utilize developer debugging, code review and in-house testing. Deploy to pre-production server for UAT. Deploy to production once approved.

21.) Describe, based on your experience with other States, a realistic estimate of effective total cost of ownership.
The State of Tennessee was in a similar situation of a failed solution, which wasted $40 plus million dollars on a Motor Vehicle System called TRUST. BIS devised a low risk option for Tennessee, by which we didn't get paid until VTRS was live. Instead of an upfront fee with an annual maintenance contract BIS proposed $.70 per Motor Vehicle registration through VTRS after go live. That we now bill the State of Tennessee monthly. Here is a breakdown of this billing structure.

	Pricing
Estimated Active Motor Vehicles	6,500,000
Cents per Transaction	$ .70
Estimated Annual Cost	$ 4,550,000.00
Estimated Monthly Cost	$ 379,166.67
Estimated 84 Month Contract Total	$ 31,850,000.00
Estimated 120 Month Contract Total	$ 45,500,000.00

a. **Is ongoing support, e.g. maintenance, from your organization required/recommended, and what is the expected/recommended size of that staff and hourly rates? Can that cost be reduced by knowledge transfer to the State's IT staff?**
Ongoing support, e.g. maintenance, from BIS is included in the $.70 per transaction. BIS is open for discussion if the cost can be reduced by knowledge transfer to the State's IT staff.

b. **What is the average or estimated cost of development or customization of an existing system?**

Resource/ Hourly Rates	Remote	On-site

Project Manager	$200	$300
Business Analyst	$150	$250
Developer	$150	$250
Documentation and Support	$100	$200

c. **What are ongoing licensing fees from your framework, including the frequency, current cost(s) and duration?**
With our solution we do not have ongoing license fees.

d. **What is the nature of estimated costs of required or recommended non-production environments?**
Tennessee provided a server, workstations, printers, decal printers for testing in non-production environments. We configured the testing environment for no additional fee.

e. **What is the estimated, average run cost for a year on a typical deployment?**
With our proposed pricing structure, DPS would not pay any fees until the system is live. After the system is live the typical yearly price would be $4,550,000.00.

22.) Describe and identify, and in consideration of your response to Question 21, a breakdown of costs for vehicle service components and functionality, including potential and anticipated costs of integrating a vehicle service information system with a separately develop driver services information system.

In Tennessee BIS integrated with various State agencies, without additional costs. We would need to know how the driver service information system plans to integrate. I would assume providing API but it could be flat files. I wouldn't be able to commit to a cost without knowing more about the driver service information system ability to integrate.

23.) Describe the recommended size and composition of the State's team supporting the project including DVS business staff, project managers, business analysts, systems analysts, software developers, and systems engineers.
From our previous experience, BIS would recommend 2 Project managers, 4 business analyst, 2 database engineers, 8 UAT testers, and 6-8 system engineers.

24.) Describe the nature of your quality assurance program.
a. describe your testing methodology.

30.) Describe the nature of your quality assurance program.
a. describe your testing methodology.

1. Development and Implementation

a. Review functional specifications

b. Assign development staff

c. Design/develop prototype to demonstrate to stakeholders

d. Develop code

e. Security

- Review for threats and vulnerabilities
- Follow specific architecture and design guidelines

f. Developer testing (primary debugging)

2. Code Reviews

a. Code to be reviewed must be completed and tested by the programmer

b. Code and all documentation must be presented to the reviewer(s)

c. Review will consist of the following

- How does the code execute in regards to the stated business need?
- How efficiently does the code perform the stated function?
- How well does the code conform to company stated programming standards?

- How well does the code handle risks identified during the requirements and analysis stage, and the OWASP Top 10?
- Documentation of the review.

3. Testing

a. Develop unit test plans using product specifications

b. Develop integration test plans using product specifications

c. Unit Testing

- Review modular code
- Test component modules to product specifications
- Identify anomalies to product specifications
- Modify code
- Re-test modified code

d. Integration Testing

- Test module integration
- Identify anomalies to specifications
- Modify code
- Re-test modified code

e. Security testing

- Test for threats and vulnerabilities
- OWASP Top 10 2017
  - A1:2017-Injection
  - A2:2017-Broken Authentication
  - A3:2017-Sensitive Data Exposure
  - A4:2017-XML External Entities (XXE)
  - A5:2017-Broken Access Control

- A6:2017-Security Misconfiguration
- A7:2017-Cross-Site Scripting (XSS)
- A8:2017-Insecure Deserialization
- A9:2017-Using Components with Known Vulnerabilities
- A10:2017-Insufficient Logging&Monitoring

4. UAT/End user testing approval

   a. Notify customer that modifications are ready to install/deploy on UAT system

   b. Deploy to UAT environment, allowing actual end users the opportunity to perform acceptance testing before the product is moved into production.

   c. Test component modules to product specifications

   d. Approval Signatures

b. describe the extent to which your testing is automated.

We utilize command line-line scripts for running automated tests against commits in a Git repository. We run unit tests every time we implement a change to a codebase. We also utilize triggers in Github so every time a commit is pushed to Github or a Pull request is opened, it automatically launches test scripts.

25.) Describe your approach to data migration.

BIS acknowledges that the data conversion is vital for a successful implementation of the new Motor Vehicle Solution. Diagram on the following page:

High Level Data Conversion	
Analysis of Database Schema and Current Data Cleansing Process	Conduct a detailed analysis of the current Database Schema. Identify and verify understanding of current schema. Also understand any Data Cleansing that is taking place.
Prepare Conversion Plan	Prepare a detailed data map establishing the correspondence between the data elements in the old and new systems.
Analysis Conversion Plan	In depth analysis of the conversion plan. Identifying any possible errors or oversights within the prepared plan.
Design	Design the actual conversion 1 to 1 process.
Development	Develop the scripts and audit reports (showing errors or duplicates) for the conversion process.
Unit, String, and Function Testing	Perform various testing to ensure conversion process is working properly and business rules are being followed.
System Testing	Perform test cases to ensure the Database conversion is working properly.
UAT Testing	Work with the State to conduct User Acceptance Testing to ensure the State agrees the conversion was successful.
Convert Pilot Local Offices	Begin with one Deputy Registrar's office, connecting to both the current Motor Vehicle system and the new Motor Vehicle Database. Identify any possible data or load issues with the new Database.
Statewide Conversion	Once all of the testing has been performed and passed, and pilot counties have been using the system successfully transparently, we will be ready to switch all counties to the new Database.

a. What challenges and approaches do you recommend for data conversion and cleansing?

Challenges we faced with Tennessee was little to no documentation to identify data that was going to be converted. We worked with the State of Tennessee IT staff throughout data conversion to ensure we converted

all data properly and accurately. Also, State of Tennessee purged large number of vehicle records that we had to convert.

b. **Describe how you ensure the converted data works in the target system.**
BIS will ensure the converted data works in the target system through our various testing (unit, string, function, system, and UAT), and then convert data to test with pilot registrars.

c. **Describe how you handle the migration of non-relational data such as documents.**
We would have to understand more of the non-relational data to provide a specific answer for this.

26.) Describe how your framework supports customization.

a. **Does it support no-code or business user customization?**
VTRS/EIVS provides a point-click GUI applications for adding and changing various items. Zero programming required by us.

b. **Can end users perform customization or is it offered via professional services?**
BIS offers customization of programming. Our Solutions Consultant will meet with you to discuss and quote.

27.) Describe your post go-live support capability

Ongoing support – BIS will provide ongoing software and supplied hardware support for this contract. We will provide phone, messaging, and on-site support when required.

BIS will also provide a Solutions Consultant that will meet with DPS and with the State of Minnesota agencies to discuss possible enhancements, problems you may be having with the proposed solution, and any new enhancement ideas that BIS may be able to program to help the State of Minnesota be more efficient.

Development changes – BIS will analyze and fix project bugs. Any new programming outside of the project will have to be discussed, considered, and may be billable.

Disaster recovery –Business Information Systems has gone to great measures to ensure that the proposed Motor Vehicle Solution can be up and running in minimal time, even in the event of a natural disaster.

BIS houses servers/equipment which host our websites, websites for our customers, and our own internal support and financial operations in our own in-house data center. We have environmental monitoring/alerting, physical resiliency, redundant fiber connectivity, etc. Even with all of that we realized things can still happen out of our control. So we also lease space from a Tier III commercial data center in Duffield, Virginia. The majority of our customers replicate data and images off-site to us so that we act as their "off-site disaster recovery" provider. As an extra pre-cautionary measure, we have their equipment/software configured to replicate that data to both BIS's in-house data center and the equipment we have housed at the commercial data center.

Through the years we've had the opportunity to work with many DR technologies such as cloud backup software, load balancer hardware and software, server/database clustering, bit-level disk replication, de-duplication, etc. As large and efficient as the system is that we've currently built might be, we realize that an implementation of the scope necessary for this project, brings new challenges and opportunities. We also realize that redundant hardware only gets you so far. The application software needs to be resilient and capable of leveraging the resiliency that the hardware provides.

Thank you for your consideration of this request for information, and if you have any questions or need anything clarified further please don't hesitate to give me a call or email.

Sincerely,

Stoney M. Hale II

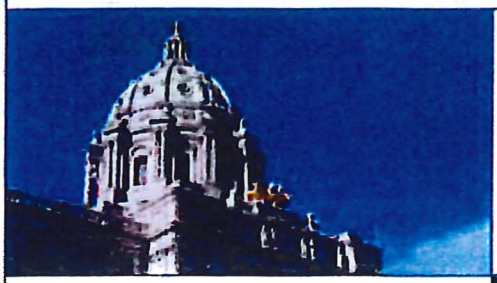
Stoney M. Hale II
Solutions Consultant
stoney@bisonline.com
Office: (866)514-5192
Cell: (423)773-2566

ATTACHMENT E

ORIGINAL

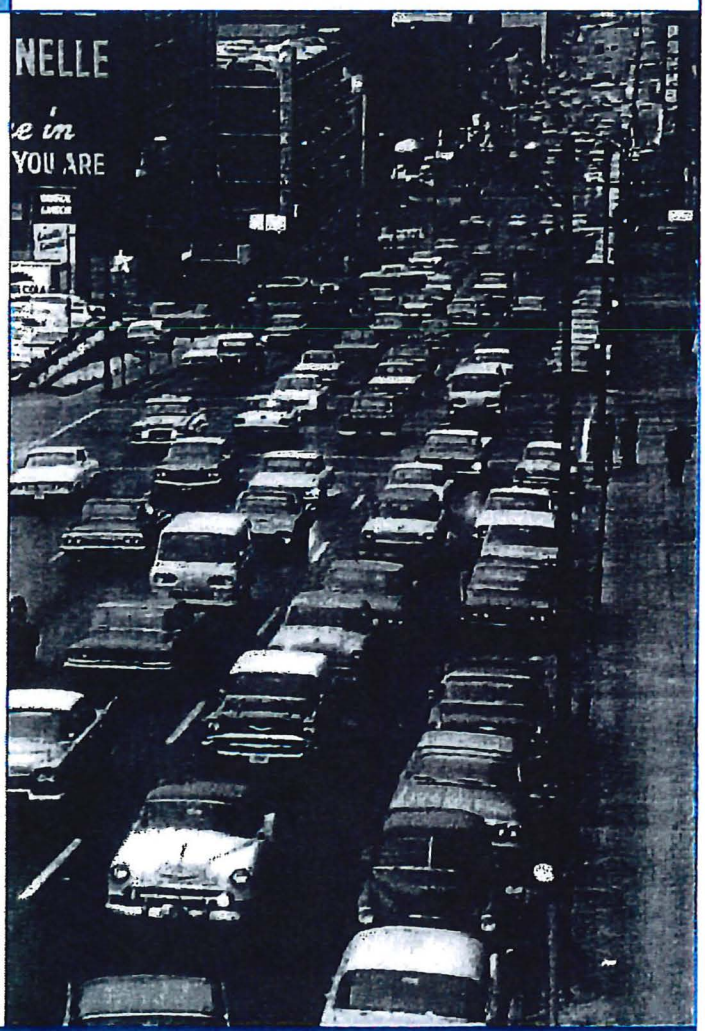
President

Minnesota Department of Public Safety



Response to the Request for Information (RFI) for

Replacement of Motor Vehicle Information System



Response Due Date:
Friday May 31, 2018

RFI RESPONSE

Prepared By:

CELTIC Systems

8961 E Bell Rd, Suite 101, Scottsdale, AZ 85260 | 480-682-3891 | contact@celtic.bz

Framework Vendors

A "Framework Vendor" is defined as having an existing motor vehicle software solution. DPS is seeking the following information from Framework Vendors:

1. Describe your Motor Vehicle framework.
    a. What business functions does your framework cover?

Celtic Response: Celtic is a successful developer of enterprise solutions for motor vehicle administrations throughout the United States and Canada. Our core enterprise platform, CTS-Hub (Figure 1), along with our flagship motor carrier products, has been successfully implemented in multiple jurisdictions.

This proven core architecture used for the Celtic Transportation Services (CTS) provides for the following business functions:

- CTS-Reg (Title and Registration)
- CTS-Drive (Driver's Licensing)
- CTS-IFR (Intrastate Fleet Registration)
- CTS-IRP (International Registration Plan)
- CTS-IFTA (International Fuel Tax Agreement)
- CTS-PARS (Oversize / Overweight Permitting and Automated Routing System)
- CTS-CVIEW (Commercial Vehicle Information Exchange Window)
- CTS-DMS (Document Management)
- CTS-iLearn (Browser Based training)
- CTS-Track (Browser based incident tracking)

Our CTS-Hub contains capabilities common across multiple applications (e.g. Inventory, Cash Register, Reporting, Finance, Universal Interface Controller (UIC)) and also supports eServices for anywhere, anytime and any-device (desktops, laptops and handheld devices) internet based access.

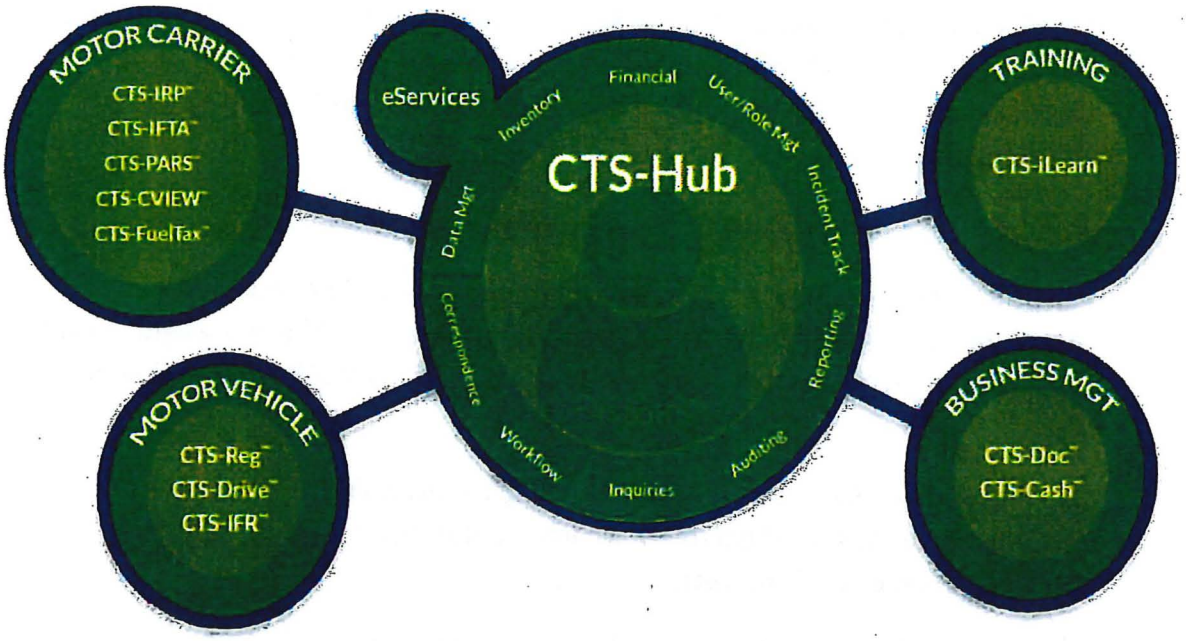


Figure 1: Celtic Hub diagram

b. Describe the technical architecture behind your code base/framework, your experience with this code base, and the platforms, software languages, databases, and other key technologies used by/with your code base/framework.

Celtic Response: CTS is developed on a Service Oriented Architecture (SOA) with a presentation layer, a business logic layer and a data layer that easily accommodates multiple, extensible servers for presentation, application/business logic and data tiers. The layers are independent of each other in that you can easily make changes to the presentation layer without affecting the business logic layer or the data layer. The data layer can be any of

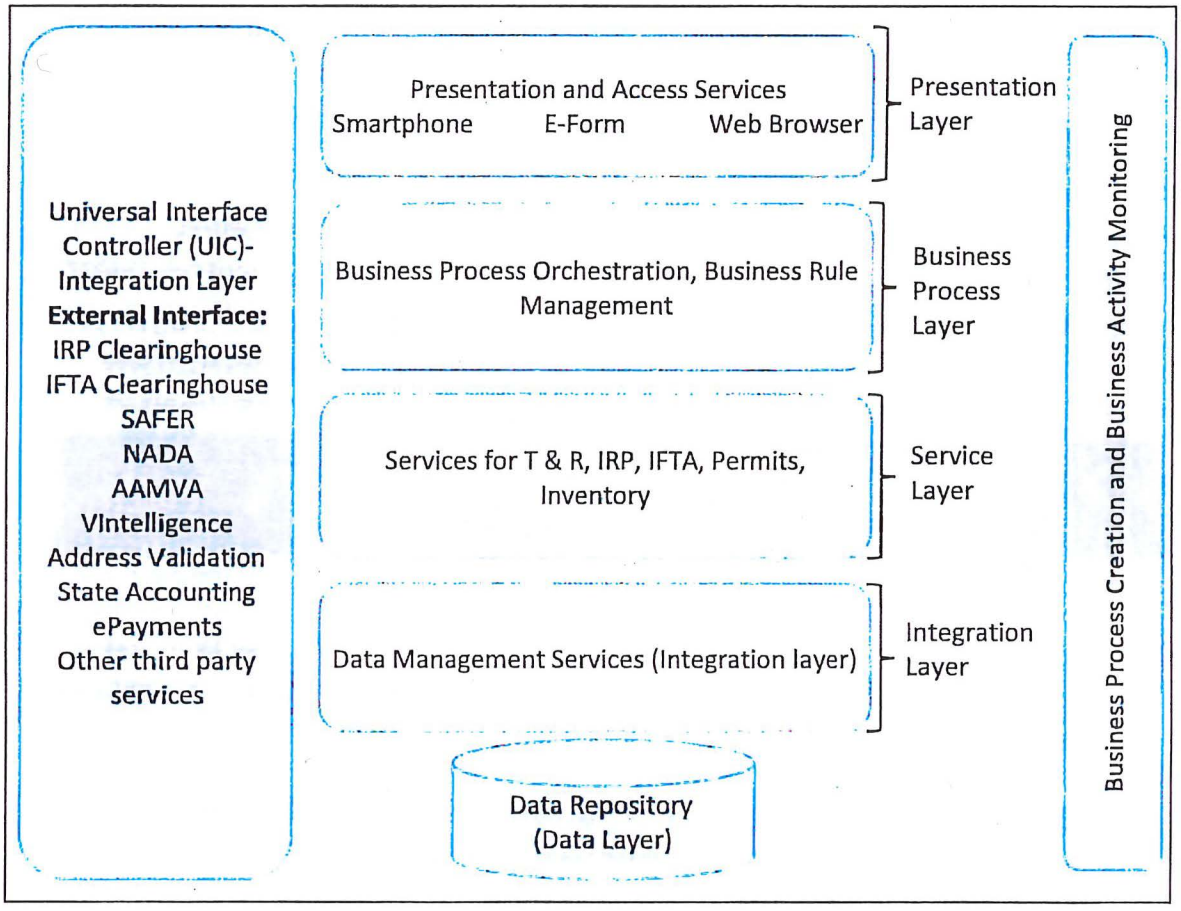
[redacted]

Architecture:

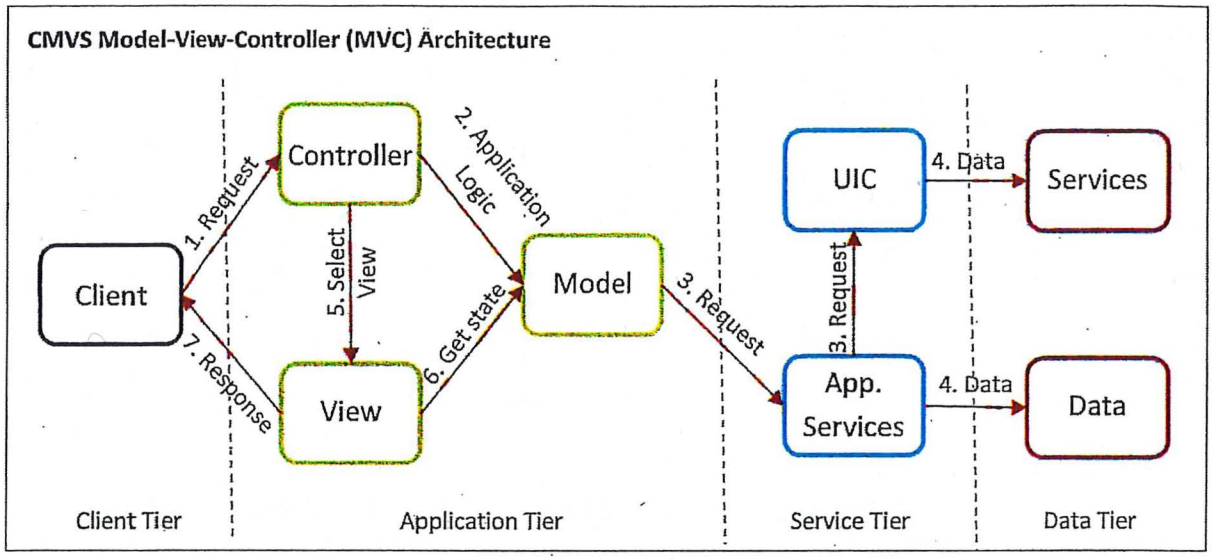
- **It is multilayered consisting of the MVC presentation layer, process layer, service layer and integration layer. This design makes the structure flexible, scalable and easily maintainable.**
- **Our Process Layer separates the process and business rules and provides multiple options to implement, either by native code or by using industry standard rules and work flow engines.**

- Our Service Layer contains all of the application specific business logic that will be used irrespective of the mode of access. For example, the same application business edit logic is used by online web interface, web service interface or a batch interface.
- Our Data Layer encapsulates all the data base access related logic
- All other interfaces (synchronous/asynchronous, inbound/outbound) are managed through our Universal Interface Controller (UIC). This is the light weight implementation of an ESB concept and can be replaced by ESB if it is desired by client.
- Our Presentation Layer provides the flexibility to customize/configure the presentation as per client needs. It accommodates web browsers as well as mobile applications, e-forms etc.

The following is a high-level diagram of the service-oriented architecture:



Following is the MVC design pattern of CTS showing the flow of request and response across multiple tiers:



c. What database(s) does your framework use? What others can it use?

i. What is the licensing model for the database?

Celtic Response: CTS supports all standard RDBMS's including current versions of Microsoft SQL Server, Oracle and DB2. The licensing model is dependent on the selection of a specific database. For example, if DPS chooses a SQL Server database solution then an enterprise license can be acquired and used across multiple applications for DPS and cost is dependent on the number of Cores per server.

d. In what states have you fully implemented your framework? Fully or partially?

Celtic Response:

The following table depicts Celtic's experience in motor vehicle administrations that includes Interstate Registration, Intrastate Fleet Registration, Title Processing, Inventory, Permitting and Routing and Cash Drawer modules.

We have implemented systems in the jurisdictions listed in the following table and we continue to provide our ongoing support and maintenance.

Jurisdiction	CTS-IRP	CTS-IFTA	CTS-Cash	CVIEW PRISM	CTS-iLearn	CTS-Doc	CTS-IFR	CTS-Reg	CTS-Drive	CTS-PARS
Pennsylvania	✓		✓	✓			✓			
Kansas	✓	*	✓	*	✓	✓	✓	✓		
Montana	✓	✓	✓	✓	✓	✓				✓

Ontario	✓	*	✓	n/a	✓	✓				✓
Iowa	✓	✓	✓	✓						
Georgia	✓	*	✓	✓	✓	✓				
Alabama	✓	✓	✓	✓	✓					
Arkansas	✓	✓	✓	*						
South Carolina	✓	✓	✓	*						
New York	✓		✓	*		✓				
West Virginia			#		✓			#	#	
Wyoming	✓	✓	✓							
Idaho	✓		✓							
IRP Inc.										

Legend:

#	–	*Fee Calculation, payment processing and Statewide Inventory for T & R and DL*
CTS-IFR	–	*Intrastate Fleet vehicle Registration for Limos, buses, taxis, etc.*
CTS-Reg	–	*Title and Registration system*
CTS-Drive	–	*Driver License system*
CTS-IRP	–	*International Registration Plan*
CTS-IFTA	–	*Internationals Fuel Tax*
CTS-PARS	-	*Oversize / Overweight Permitting and Routing System*
CTS-iLearn	–	*Browser based learning content management system*
CTS-Doc	–	*Document Management for in-line scanning, automatic indexing, storage*
*	–	*Interfaced with third-party systems*

e. In what states, if applicable, are you in the process of implementing your framework?

Celtic Response: We are in process of implementing our systems in the jurisdictions shown in the following table:

Jurisdiction	CTS-IRP	CTS-IFTA	CTS-Cash	CVIEW PRISM	CTS-iLearn	CTS-Doc	CTS-IFR	CTS-Reg	CTS-Drive	CTS-PARS
District of Columbia	✓	✓	✓	✓	✓	✓				

Connecticut	✓		✓		✓	✓				
Alberta	✓		✓		✓	✓				
Tennessee			✓	*						✓

f. What investment has your company made in your framework? Or was your framework developed specifically for another state? Did you invest in your framework independently of a contract with a state?

Celtic Response: CTS framework was built independent of individual jurisdictions need and is proprietary to Celtic Transportation Services COTS Products.

g. What are your plans for future investment in your framework?

Celtic Response: Our CTS COTS products are fully matured, highly scalable and ready to implement, satisfying the DPS requirements. CTS products were developed following the standards set by the WWW Consortium with a well-structured application layers and user interfaces that are capable of incorporating emerging industry standard technologies.

Our strategy for continuous product improvement, along with the incorporation of many client-requested enhancements, has enabled us to grow and evolve our products over time. The proven, core architecture used for our products provides the foundation for us to invest in development of mobile applications to meet the demands of citizens for easily accessible and usable across multiple applications. To date we have developed the following mobile apps exclusive of any State involvement:

- CTS-MCnow (Mobile Apps for Motor Carriers)
- CTS-PRIO (Mobile Apps for law enforcement, State Agencies and individuals)
- CTS-CVIEWnow (wearables for road side law enforcement)

Our planned near-term investment is in the area of voice command technology where by users can perform CTS functions without logging on to the system. For e.g. a user can say "Celtic renew fleet one" and the system will start a straight renewal for a fleet and send an invoice to the customer. The carrier will receive a notification via an email or an alert via a mobile app and they can pay for the renewal. We are in the process of getting feedback from our customers to make this feature as user friendly as possible.

h. What browsers do your framework support?

Celtic Response: CTS supports all standard browsers including:

- Microsoft Edge
- Microsoft IE11

- Google Chrome
- Mozilla Firefox and
- Apple Safari

i. What interfaces with standard government agencies/NGO organizations does your approach already support?

Celtic Response: CTS interfaces with standard government agencies / NGO organizations includes:

- FMCSA accreditation
- NADA
- Electronic payment processing
- Address Validation
- VINtelligence
- Single Sign on
- State Financial Systems
- State Legacy Systems
- IRP Clearinghouse
- IFTA Clearinghouse
- ESRI ArcGIS Services
- CVIEW
- PRISM
- AASHTO BrR

j. What is the average number of concurrent users in other state implementations?

Celtic Response: Average number of concurrent users in our Jurisdictions is between 2000 – 3000.

k. Does your implementation have any third-party SAS dependencies?

Celtic Response: Depending on the requirements of DPS, CTS may have dependencies on third-party SAS like address validation, VIN Validation, etc. Celtic will create an interface control document that will define all the external interfaces and communications carried out by CTS with the jurisdictions existing systems and any third party systems that are necessary.

l. Describe how your framework provides data to third-party consumers.

i. What protocols are used?

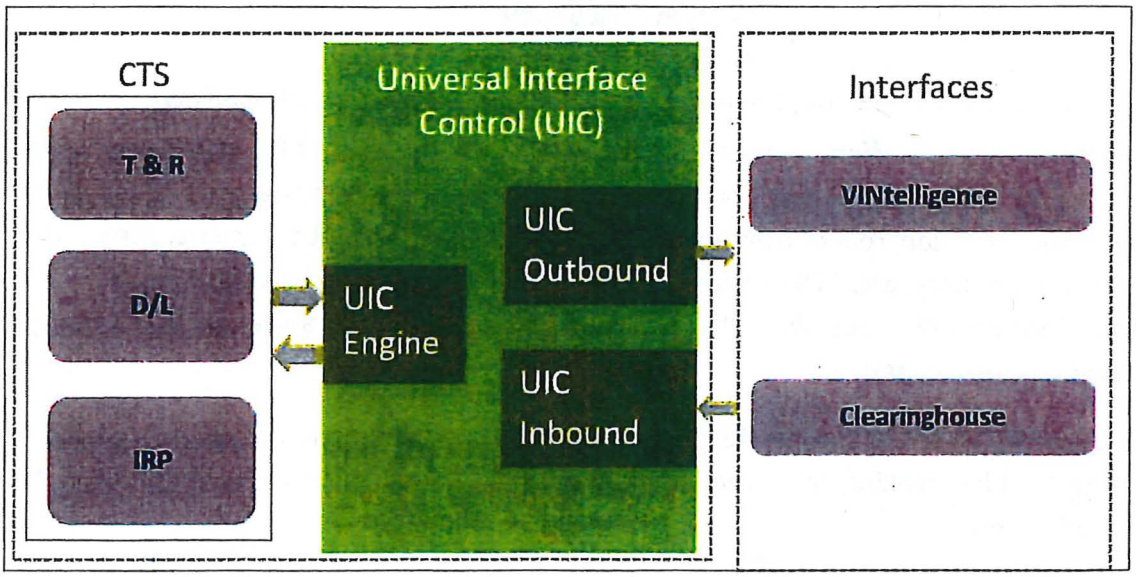
Celtic Response: The following features of CTS explains how our framework provides data to third-party consumers:

- CTS is a role-based system whereby depending on the role the user has, they will be granted access to specific functionality within the system
- External users (Carrier) can only see data associated with their account. Service Providers will have access to those accounts they have been authorized to manage
- Our framework can provide data to third-party consumers via web services or in standard data formats that include csv, xml, excel, etc.

m. Describe how your framework handles the consumption of third-party data feeds.

Celtic Response: Through our proprietary Universal Interface Controller (UIC), we provide quick and easy interfaces for third-party data feeds. CTS supports most standard data formats including XML, JSON, CSV files, Flat Files, Shape Files, Excel spreadsheets for importing and exporting data to and from external systems.

The following diagram shows a connectivity of CTS with external systems / services:



n. Describe how your framework supports self-service for anonymous users.

Celtic Response: CTS provides self-service for anonymous users based on the type of services required. The following table provides an example of how our framework supports self-service for anonymous users:

Category	Self-Service for anonymous users	Self-Service for authorized users
Target group and purpose	The information of general interest and contact data are made available to the public,	Role based options are offered to customers or other authenticated and authorized

	without authenticating the users	representatives of specific target groups to participate in the process of providing service, performing transactions and routine operations in an automated way
Technology	Is usually based on content management software (CMS) and the major part of the development work consists of the content elaboration	The business rules of specific function are developed.
Connection with the system for business functions (processing system).	A customer/user can download the forms of documents and send the filled-out forms by email, while the data written on the filled-out forms is entered into the system by an employee of the State Agency or service provider. The information displayed is not directly connected with the user.	CTS is closely integrated with the functions used. The information entered by the authenticated user is automatically transferred into the system. The user's personal information may be displayed.

o. Describe how your framework supports review and approval workflows.

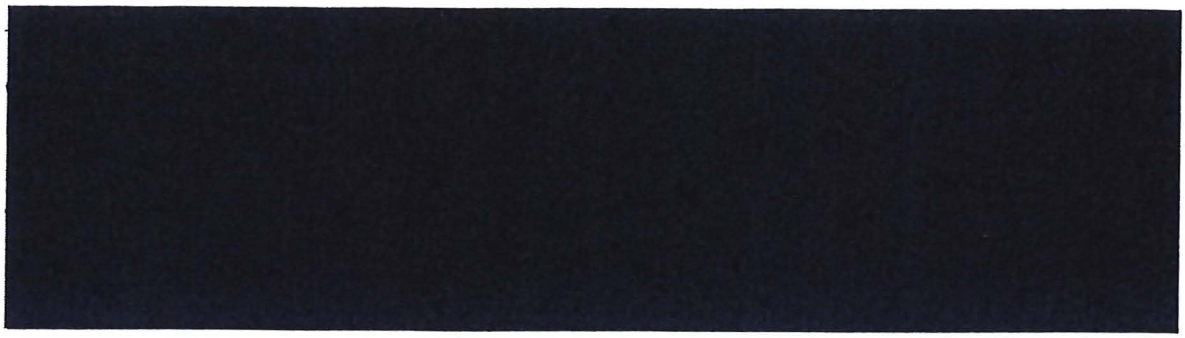
Celtic Response: CTS offers a very sophisticated queue management for authorized users to review, approve or deny application requests. Applications can be assigned to a specific work queue, location, role or user. Applications can be filtered by work queue, assigned work group, priority, etc. CTS can accommodate multiple approval requests. Email notifications are automatically sent to the appropriate users when an application is ready for review or status change.

The application work queue also features a "show statistics" function to assist in workload management by breaking down the number of pending applications by location, queue type and workgroup.

2. Describe the authentication/authorization/user-identity management features in your code base/framework.
   a. If not within the framework, with what products does your framework interact?
   b. Minnesota has a centrally-managed enterprise IAM implementation. Characterize the feasibility of leveraging that system for authentication and authorization.

Celtic Response:

CTS is a role-based system that can utilize various authentication method and can be configured to comply with Minnesota's enterprise IAM to accommodate authentication.



CTS user management module controls adding, modifying, suspending, and deactivating system users (via secure LDAP) and assigning users to user roles, user groups and MN Service locations. During first time login, the system allows authorized users to create security questions and answers that can be used for retrieval of their passwords.

3. Describe your use of third-party COTS products for the following capabilities:
   a. Rules definition and management
   b. Work flow definition and management
   c. Case management
   d. Reporting
   e. Document management
   f. Telephony & IVR
   g. E-forms
   h. E-learning
   i. Financial accounting and reporting
   j. Inventory management
   k. Change, Release, and Service Desk Management

Celtic Response: Celtic offers multiple COTS products that are tightly integrated to satisfy and exceed all of the State of Minnesota's RFI requirements, making it a cost effective and efficient business solution.

a) Rules definition and management

CTS provides extensive configurability for major layers of the system to control process, decision, rules, data and workflow logic.

b) Work flow definition and management

CTS provide a workflow management module that allows internal users to submit transactions to a pre-defined work queue. CTS also provides a web processing function as a communication tool between internal and external users.

c) Case management

Celtic has implemented an open source case management tool that has been configured to meet multiple jurisdiction requirements for incident tracking and case management.

d) Reporting

CTS's standard / canned report templates are developed using Crystal Reports. CTS also provides adhoc reporting tool to provide reporting using SQL what can then be exported to a CSV file.

e) Document management

CTS-Doc™ is a Document Management System for inline scanning, indexing, collection and storage of important documents. Batch scanning is also included for mass document collection. Our system also features automatic indexing – a sophisticated numbering process that occurs during document scanning, which allows for rapid retrieval of documents based on specific search criteria (i.e., customer, account, etc.). Features include:

- Web-based system compatible with popular browsers (IE, Chrome & Firefox)
- Save documents in a variety of file formats (PDF, PNG, JPEG, GIF)
- Uses TWAIN and WIA compliant scanner
- Built-in reconciliation process
- Support batch scanning
- Documents can be stored in a local image repository or in an existing repository

f) Telephony & IVR

CTS can interface with all standard IVR services API including:

- Plum Voice Hosted IVR
- Connect First
- Altitude, etc.

g) E-forms

Infrequent external users can use e-forms to submit a request for service and submit the data by filling out a form. The system will perform the necessary edits, validate the request and create the transaction for an internal user to pick up from a queue and finish processing the request. E-Forms technology can be decided mutually by Celtic and DPS.

h) E-learning

Celtic CTS-iLearn™ is a flexible, browser-based Learning Content Management System that enables you to remotely train & evaluate trainees from any desktop or mobile device. It supports a variety of content delivery formats, including text, graphics, audio and video. CTS-iLearn allows you to test your trainee's competency levels using concept-, procedure- or application-based question categories. Plus, with intelligent testing analysis, CTS-iLearn can identify learner's knowledge gaps, giving trainees a prescription for success. A certificate of completion can automatically be generated after a course is passed. Highlights include:

- Save valuable resource time and cost by reducing travel for training
- Highly-configurable content & question formats, branding, pass/fail thresholds
- Upload file types such as videos, audio, images, PDFs, etc.
- Course builder
- Content editor/builder
- Question builder
- Sharable Content Object Reference Model (SCORM compliant)
- Easy setup and management of user roles for administrators, instructors, trainees, etc.
- User activity and progress reporting

i) **Financial accounting and reporting**

CTS-Cash™ is a standalone cash drawer and financial module enabling the collection of and distribution of funds for transactions across multiple applications. It is a one stop web-based solution for cash management requirements. It calculates fees or interfaces with other applications that will provide fees, accept multiple payment types and interface with the inventory system to generate credentials along with a receipt for the appropriate transaction. Features include:

- Payment Management
- Statement Management
- Cash Drawer Reconciliation
- Adjustments
- Distributions
- Consolidations
- Fund Allocations
- Escrow
- NSF
- Refunds
- Interfaces to state financial system
- Complete cash management workflow:

  - Creating a business day
  - Opening a cash drawer for each user
  - Collecting payments
  - Closing cash drawer
  - Reconciling the payments per location
  - Depositing the payments per locations
- Business Intelligence reporting
- End of day reporting
- Ad-hoc reporting

j) Inventory management

Celtic's inventory management system includes the following high-level features:

- Ability to add new inventory for different locations with edits based on inventory type
- Ability to transfer unused inventory between locations
- Ability to update inventory status including designating the status as lost, damaged, or stolen
- Assignment of inventory during transaction process based on the next available number and type of inventory to be issued
- Inventory reporting providing details on inventory on hand as well as issued
- Ordering for new inventory

k) Change, Release, and Service Desk Management

Celtic provides the browser-based Incident tracking system (CTS-Track) integrated with our proposed solution to assist users and developers in communicating incidents that occur during the development and production support life cycle of the project to automatically notify support staff and management via email. When users enter the description of an incident they have an option to attach a screen shot for clarification and give it a priority and severity. Incidents are reviewed and assigned to appropriate resources for analysis and resolution.

During development and support & maintenance users will utilize the Incident tracking module to ensure their incident gets reported, prioritized and resolved and that "nothing falls through the cracks". CTS-Track also provides various types of statistical reports which enables management to extract important business intelligence about the project operations and take the informed decisions.

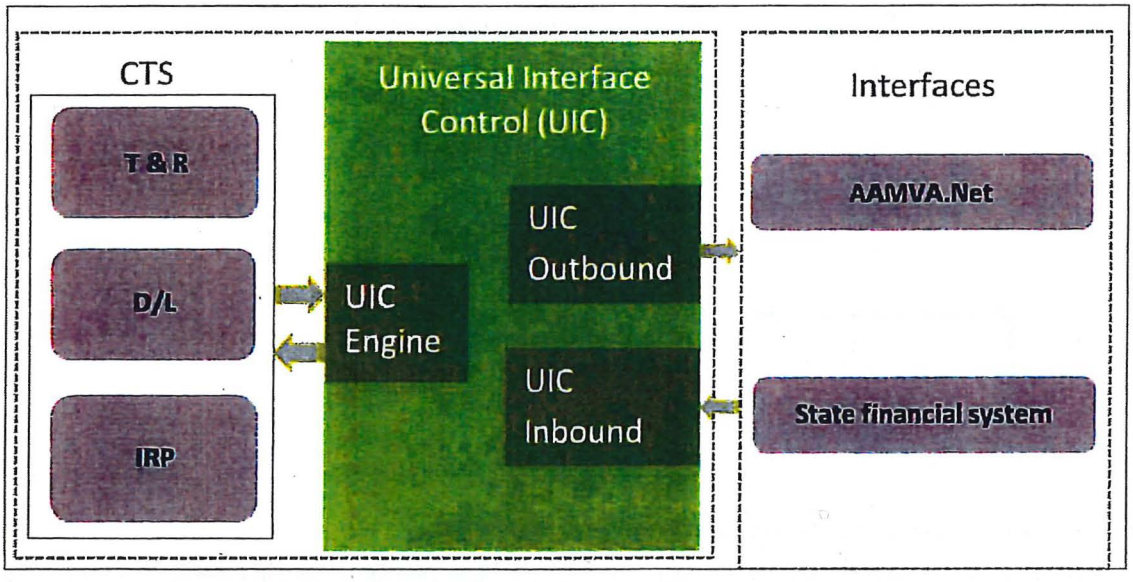
4. Describe how your framework handles Federal mandates.

Celtic Response: The Proposed CTS COTS product is fully compliant with the federal mandates. The Celtic COTS product is fully mature, totally integrated, highly scalable and

ready to configure / modify to satisfy the requirements of the DPS. Celtic is an associate member in AAMVA, IRP, IFTA and the CVISN/ITD Architecture Configuration Control Board (ACCB team) as a Vendor and we make every effort to remain current with upcoming mandates.

5. Describe your approach (architecture and design considerations) for integration with internal (e.g. State financial system) and external (e.g. AAMVA) systems to a DMV system.

Celtic Response: Through our proprietary Universal Interface Controller (UIC), we provide quick and easy interfaces to external interfacing capabilities to accommodate AAMVA interfaces, FMCSA accreditation, State financial system, electronic payment processing, address validation, etc. CMVS supports most standard data formats including XML, JSON, CSV files, Flat Files, Shape Files, Excel spreadsheets to import / export / update data to and from external systems. The following diagram shows a connectivity of CMVS with external systems / services:



6. Describe how your framework accommodates ADA requirements.

Celtic Response: CTS provide an ADA compliant application theme that accommodates ADA requirements and has been tested and proven in multiple jurisdictions.

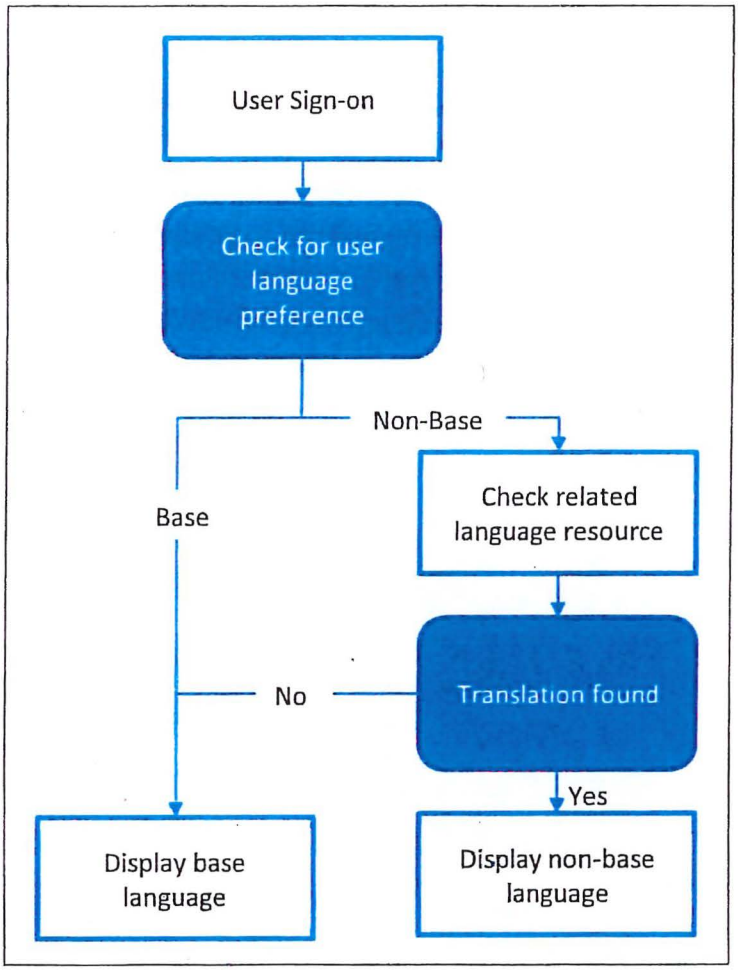
7. Identify whether your code base/framework supports multiple languages (e.g. English and Spanish).

   How is this supported by your code base/framework?

   a. If multiple languages are supported, how are translations managed?

Celtic Response: CTS is designed to supports multiple languages. We have implemented English and French for Ontario. The following process flow illustrates the selection of the language, beginning with the language selected when the user signs in to the CTS

application and shows how translations are managed:



8. Describe your typical point-of-service hardware configuration.

Celtic Response: Celtic recommends the following hardware specifications for on-site installation for the proposed CTS solution.

		Minimum Configuration				
CMVS Environments	**Description**	**Qty**	**CPU Core**	**Memory (GB)**	**Hard Disk (GB)**	**Comment**
[redacted]						

		Minimum Configuration				
CMVS Environments	Description	Qty	CPU Core	Memory (GB)	Hard Disk (GB)	Comment
[redacted]						

9. Describe your requirements/expectations regarding network or management of the computing infrastructure at the point of service (e.g. Must all workstations be members of an Active Directory Doman?).

Celtic Response: Celtic recommends that workstations of internal user be members of an Active Directory Domain, but this is not mandatory as CTS will interface with Minnesota's enterprise IAM for user authentication. External users can also be authenticated through enterprise IAM or shall be created within specific group or child active directories to overcome security risk.

10. Describe the production deployment infrastructure options, including which components can be cloud-hosted, and the scalability characteristics of the implementation including but not limited to:
    a. Database
    b. Load Balancers
    c. Application Tier
    d. Web Tier
    e. Networking and/or bandwith constraints
    f. Document management

Celtic Response:

Celtic provides solutions that work in the following environments:

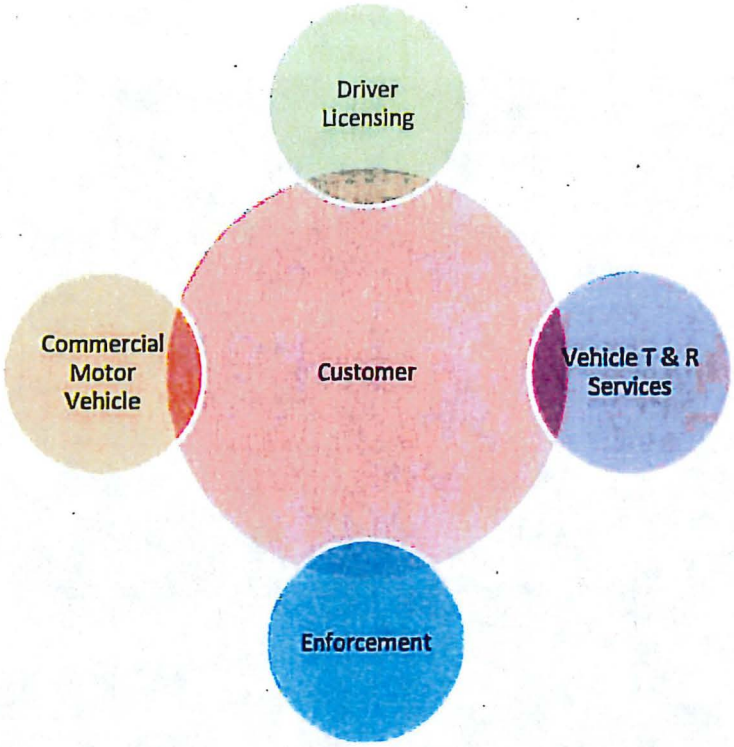
- State hosted
- Vendor hosted (e.g. SunGard)
- Cloud hosted (e.g. Govt or private cloud)

Scalability:

- Database: The proposed application is fully capable of supporting database clustering and distributed table spaces for better performance. Some of our jurisdictions have implemented Celtic products in clustered database approach for better performance and scalability.
- Load Balancer: The proposed application is fully capable of supporting application load balancer. The salability of the application is dependent of infrastructure availability.
- Application Tire: the proposed application is logically divided in sub modules with service-oriented architecture. This architecture allows Celtic to deploy application modules in different servers based on scalability requirement.
- Web Tire: the proposed application web tire follows similar model discussed in the application tire. It is logically divided in sub modules with service-oriented architecture. This architecture allows Celtic to deploy application modules in different servers based on scalability requirement.
- Networking and Bandwidth: This is one of the crucial components for better performance. The application is designed to work with low bandwidth, this increases the performance with less bandwidth.
- Document Management: The proposed document management application is a web-based system and provides scalability similar to all other applications.

11. Describe the underlying approach to your framework (e.g. customer centric, vehicle centric, etc.).

Celtic Response: CTS offers customer centric solution that provides 360 degree view of the customer that allows the DPS and the customer a single integrated platform for all type of services offered by DPS.



12. What software third-party licenses, products or services would Minnesota need to acquire or possess in order to use your framework. In particular, what third-party components does your framework rely on?

Celtic Response: Minnesota requires following software licenses in order to implement CTS:

Software	Recommended Version	Provision by INDOT	Comments
[redacted]			

Software	Recommended Version	Provision by INDOT	Comments
[redacted]			

13. Describe your experience with release implementations with systems of this size.

Celtic Response: Table 1 illustrates the range of products we have and the State Governments we service. As you can see, our customer base is State Government, Provincial Government, and IRP Inc. which, in turn, services IRP for all the states and provinces. Our Resources have implemented T&R in NC and GA and also implemented T & R and Drivers Licensing in SC. State Government system support is one of our major lines of business. We offer a variety of implementation options including jurisdiction hosted, Celtic hosted, Cloud of your choice hosted and we provide our solution in .Net and Java application architecture as required by the state. Our solution is independent of the back end database choice including SQL Server, Oracle and DB2. We have implemented systems in the jurisdictions shown in Table 1 and we continue to provide our support and maintenance for each of them on an ongoing basis.

Jurisdiction	CTS-IRP	CTS-IFTA	CTS-Cash	CVIEW PRISM	CTS-iLearn	CTS-Doc	CTS-IFR	CTS-Reg	CTS-Drive
Pennsylvania	✓		✓	✓			✓		

Kansas	✓	*	✓	*	✓	✓	✓	✓	
Montana	✓	✓	✓	✓	✓	✓			
Ontario	✓	*	✓	n/a	✓	✓			
Iowa	✓	✓	✓	✓					
Georgia	✓	*	✓	✓	✓	✓			
Alabama	✓	✓	✓	✓	✓				
Arkansas	✓	✓	✓	*					
South Carolina	✓	✓	✓	*					
New York	✓		✓	*		✓			
West Virginia	✓		✓		✓			CTS-Cash	CTS-Cash
Wyoming	✓	✓	✓	*					
IRP Inc.									

Table 1: Celtic deployed Products and Jurisdictions

Legend:

*	*- Interfaced with third-party systems*
CTS-Cash	*- Fee Calculation, payment processing and Statewide Inventory for T & R and DL*
CTS-IFR	*- Intrastate Fleet vehicle Registration for Limos, buses, taxis, etc.)*
CTS-Reg	*- Title and Registration system*
CTS-Drive	*- Driver License system*
CTS-IRP	*- International Registration Plan*
CTS-IFTA	*- International Fuel Tax*
CTS-iLearn	*- Browser based learning content management system*
CTS-Doc	*- Document Management for in-line scanning, automatic indexing, storage*

In all our implementations, we follow our proven COTS implementation methodology that includes requirements verification, detailed COTS GAP analysis, Product Verification Documentation (PVD) to identify the necessary changes to the COTS product, an Interface Control Document (ICD) to identify all the interfaces with detailed interface formats. All our projects have been implemented on-time and within budget.

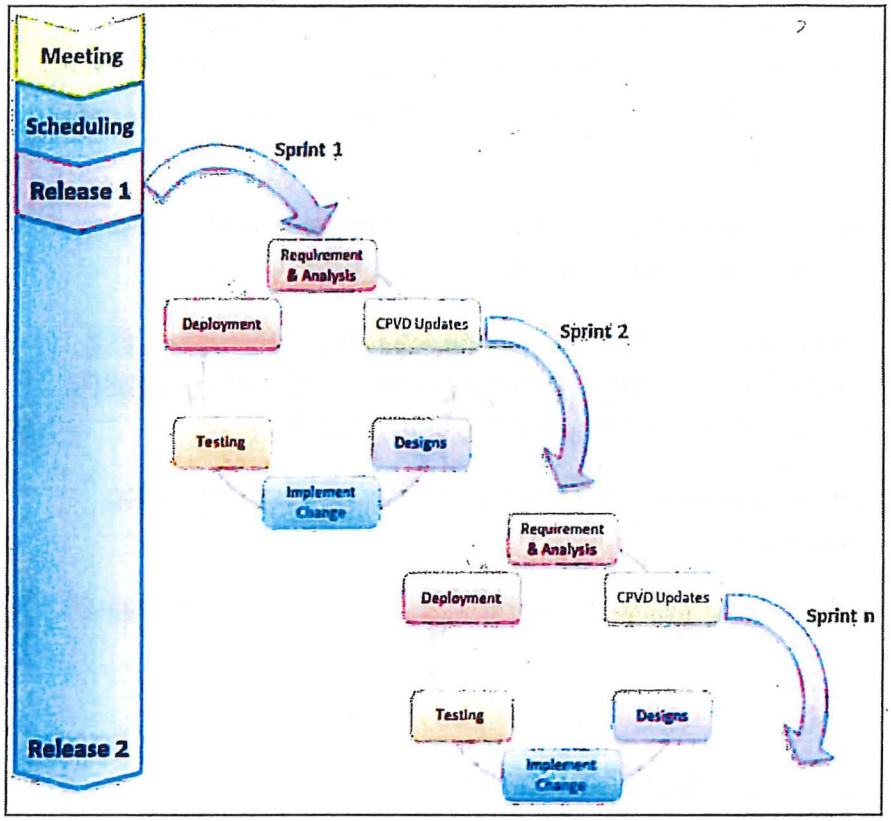
14. Describe the development methodology(ies) that you would use for this system.

Celtic Response: Celtic follows multiple development approaches based on type and size of

a given project. For the CTS Solution, we will follow our COTS Implementation Hybrid Agile Methodology (HAM).

Under the HAM approach, we will build a COTS Product Verification Document (PVD) whereby each piece of functionality will be addressed by the State Business Area Experts (BAE's) and the Celtic Subject Matter experts (SME's) to ensure that each piece is consistent with MN DPS requirements. Using the PVD, we will configure and customize the COTS solution where necessary. As pieces of functionality are completed and configured, they will be released to a sandbox environment for user verification. This approach will help validate both the application and the data. As users provide early feedback, action can be taken to rectify the programs and / or data prior to the next sandbox release. In this way, the users can see their feedback was addressed and is reflected in the next sandbox release. This approach has another advantage in that the users are gaining valuable familiarity with the system and at the same time they will feel a sense of ownership and buy-in to the new way of doing business. As each piece of functionality is validated by the State it is essentially already user accepted but will not be deployed to PROD as would normally be the case in a true AGILE methodology. The validated code will remain in a User Acceptance environment until all of the CTS functionality has been verified. At this point a final formal User Acceptance phase will take place and once accepted the entire system will be moved to production. In summary, we have tested all of the application, the converted data has been verified, people are trained and comfortable and the GO-Live phase is just another day in the sandbox!!

Following is our COTS Implementation with Hybrid Agile Methodology:



15. Based on your experience with other states, what is the feasibility of combining a legacy mainframe system previously used with a current web-based system?

Celtic Response: Legacy mainframe systems can be used throughout a modernization effort to help achieve the final goal; a modernize system. For example, while modernizing a driver's license system with the intent of a customer centric goal the legacy title and registration system can be kept up and running and updated via some enterprise service bus as changes are made to the driver's license customer. Ultimately when the title and registration system is replaced the common customer is in place and the mainframe legacy system may be valuable for inquiry use as required.

16. What is the typical time frame for the design, development, and implementation of a motor vehicle information system similar in size? For example, based on your average customer's motor vehicle system, what is a realistic, estimated timeline or schedule from the time a contract is signed through implementation and troubleshooting?

Celtic Response: Celtic estimates for the implementation of the Minnesota DPS modernization efforts are 2 to 3 years.

17. What preparation or planning have you seen States complete - or not complete - prior to starting an implementation project and how did it impact the project?

Celtic Response: We recommend that:

- Upper management be committed to the successful implementation of the project and will assist throughout the project to overcome road blocks that may arise not within the project management control.

- Project managers for both State and Celtic teams work together to identify project risks and mitigations, execute the project plan, fully resource the tasks, gather feedback from team leads and communicate the project status to all team members.
- Deliverable review be done in a timely manner and with consolidated feedback provided for Celtic review, discussion and delivery of the final version.
- Subject matter experts be available and dedicated to participating in the COTS Product Verification Sessions and spend dedicated time throughout the project working in the sandbox to familiarize themselves with the system.
- IT resources be available and dedicated to participating in the creation of the Interface Control Document.

18. From your perspective, what could be included in a RFP to contribute to project success?

Celtic Response:

- Clear and concise requirements
- Commitment to fixed consolidated feedback turnaround time
- Commitment to extensive sandbox training and early feedback
- Commitment to State data cleanup responsibility and timelines for corrections

19. If DPS decides to issue a RFP, would your company be interested submitting a proposal? If not, why not?

Celtic Response: Celtic will be more than happy to submit a proposal.

20. Describe your approach to software releases.

Celtic Response: Celtic will make all attempts to bundle changes into releases based on the type of change required and the urgency. The table below summarizes the release management processes.

Release Type	Schedule and Frequency	Notification
Major Releases	Frequency as required / planed and typica scheduled on weekends and/or after normal business hours to have the opportunity to fix any critical errors befor clients can access the site.	Stakeholders will be notified at least Two (2) months prior to deployment via email and/or during status meeti updates.

Minor Releases	Scheduled on a quarterly basis typically in March, June, September and early December.	Stakeholders will be notified of relea content at least one (1) month prior deployment via email and/or during status meeting updates.
Emergency Releases or Emergency Quick Fix (EQF	Scheduled on an "as required" basis.	Stakeholders will be notified as soo as possible of this type of release.

21. Describe, based on your experience with other States, a realistic estimate of effective total cost of ownership.

    a. Is ongoing support, e.g. maintenance, from your organization required/recommended, and what is the expected/recommended size of that staff and average hourly rates? Can that cost be reduced by knowledge transfer to the state's IT staff?

Celtic Response:

- Ongoing maintenance and support is recommended for some period of time
- Average hourly rates are $115.00
- Knowledge transfer to the state is possible over some period of time and the number of resources required for support and maintenance by Celtic can be reduced as necessary

    b. What is the average or estimated cost of development or customization of an existing system?

Celtic Response: Average cost of configuration and customization for the Minnesota DPS modernization efforts will be in the range of $15 M to $30 M.

    c. What are ongoing licensing fees for your framework, including the frequency, current cost(s) and duration?

Celtic Response: Celtic has a one-time software license fee for the use of the CTS framework and software products of $5 M.

    d. What is the nature and estimated costs of required or recommended non-production environments?

Celtic Response: Celtic recommends use of three non-production environments:

- Development
- Training / Sandbox

- UAT (This environment will be a clone of the production environment to ensure smooth transition to production)

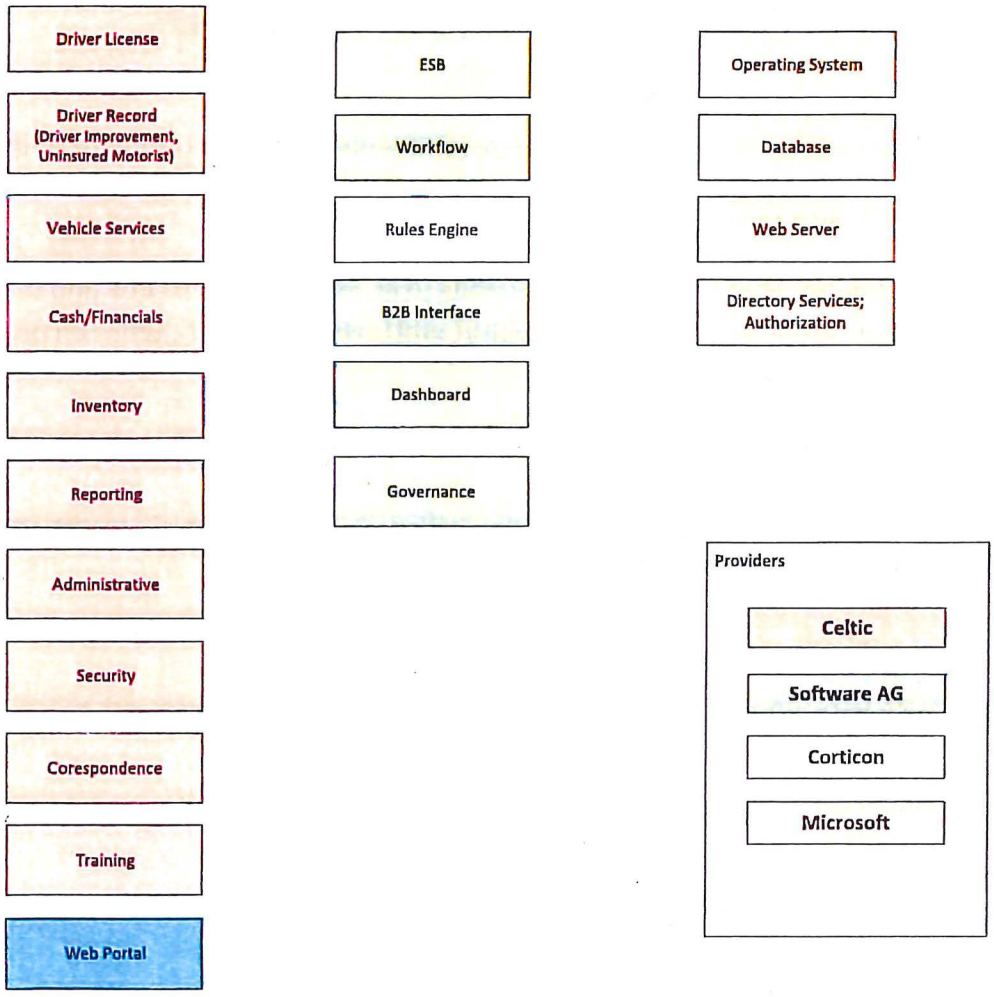
e. What is the estimated, average run cost for a year on a typical deployment?

Celtic Response: Celtic support and maintenance cost for the Minnesota DPS modernization efforts will be in the range of $1.5 M to $2.0 M.

22. Describe and identify, and in consideration of your response to Question 21, a breakdown of costs for vehicle services components and functionality, including potential and anticipated costs of integrating a vehicle services information system with a separately developed driver services information system.

Celtic Response:

- Celtic envisions a complete modernization to include all components of vehicle and driver services. The major components are shown in the diagram below:



These are the modules that could make up the MN solution. Essentially we have the

Modernized legacy modules, the Mid Tier Applications and the foundation software required to provide the best solution. We have many modules that are shared across the main applications such as inventory, cash drawer, Rules Engine, Workflow management etc. Our team will work on the designated modules to comply with the MN DPS specific requirements.

23. Describe the recommended size and composition of the state's team supporting the project including DVS business staff, project managers, business analysts, systems analysts, software developers, and systems engineer.

Celtic Response: Celtic anticipates the need for a State project team consisting of a full time project manager, 3 full time business analysts for Vehicle Services, 3 full time business analysts for Drivers services, 2 half time system analysts, 1 half time network engineer, 2 half time software developers and a half time system engineer throughout the project.

24. Describe the nature of your quality assurance program.
    a. Describe your testing methodology.

Celtic Response: After the product verification document (PVD) is finalized and all changes approved, the development team will configure the system and make any modifications to the code, thoroughly test at the unit level and perform system integration testing. The Quality Assurance team will perform system testing and stress testing in preparation for User Acceptance Testing (UAT), training and cutover to production. The personnel requirements for end-user testing by DPS personnel will be specifically called out.

    b. Describe the extent to which your testing is automated.

[redacted]

testing. Our test automation supports:

- Frequent regression testing
- Virtually unlimited iteration of test case execution
- Disciplined documentation of test cases
- Finding defects missed by manual testing

25. Describe your approach to data migration.
    a. What challenges and approaches do you recommend for data conversion and cleansing?

Celtic Response:

Celtic has performed a number of data migration efforts for multiple jurisdictions including some that have their current vendor data and converted it to the Celtic Information Database format. We will work with the DPS Implementation Manager to ensure integrity and validity of the data. We will run reports to help identify inconsistencies in the data and provide these reports to the DPS for any necessary clean-up activities. We will run several trial conversions and use the application to help validate the converted data. Converted data also helps to verify the application is working properly as designed.

A typical sequence of steps for data conversion would look as follows:

- Identify required data sets to be converted during requirements collection.
- Obtain initial conversion files
- Table/Column level two-way mapping (Legacy → New and New → Legacy)
- Create conversion SQL for code tables
- Create delete SQL for blank database
- Conversion Map creation
- First conversion
- Prepare data clean-up reports
- Weekly clean-up reports review meeting with DPS
- Second conversion
- Prepare data clean-up reports
- Perform data cleansing activities
- System Test
- Define Test Scripts and Acceptance Criteria
- System Test PASS
- Team Celtic Readiness Reviews
- Integrated System Demonstration
- Review/Update Final (Cut-over) Data Conversion Plans and Schedule

- Review/Update Final Transition/Cut-over Plans and Schedule
- Review/Update Final Education and Training Plans and Schedule
- Review/Update Final Testing Plans and Schedule

Celtic will migrate all of the identified tables to the new Celtic data structures. We will create a two-way mapping plan to ensure no data fields are missed in the old format and ensure all of the fields in the new data structure will contain a valid value.

Celtic will utilize conversion tools and programs, as necessary, to accomplish the data conversion task. This task is typically the longest task in the project for Motor Carrier systems. The migration activity will consist of multiple steps depending on the current data condition. Celtic will create various reports at each step of the conversion to ensure:

- Counts in and out are consistent
- Data fields contain expected values

Records that are not converted have an explanation so they can be fixed and/or deleted

The Celtic conversion approach is to eliminate any conversion exception prior to the final run by having multiple conversions using copies of production data and fixing exceptions as they occur. Our conversion programs will identify invalid field values; such as invalid codes and invalid phone numbers, USDOT numbers, VIN's etc. as required. In this way, the results of the final conversion to production will be known prior to the run.

b. Describe how you ensure the converted data works in the target system.

Celtic Response: The conversion process will be on-going from day one of the project and will end as the last step of the development phase when we perform the final conversion and load the production database with the newly created database. During development we will schedule several trial conversions as we complete the data mapping and data cleansing activities. We will utilize the converted data from trial conversions to load the TEST database and test the application using parallel testing. By taking customer applications that are being processed in production and entering them into the new customized solution, we can compare the results from TEST against the production results and make any necessary changes to the solution. This approach will validate both the converted data and the application. We will continue with this iteration until we are satisfied the database is clean and the CMVS applications are functioning as expected. Then we can run the final conversion.

c. Describe how you handle the migration of non-relational data such as documents.

Celtic Response: Celtic will convert the file and index information into the new repository and change the path name for access to documents in the new document repository.

26. Describe how your framework supports customization.

    a. Does it support No-Code or business user customization?

Celtic Response: CTS provides no-code configuration for major layers of the system to control process, decision, rules, data and workflow logic.

    b. Can end users perform customizations or is it offered via professional services?

Celtic Response: Business users can perform customizations limited to data logic or system configurations. As business needs evolve over the term of the contract, Celtic provides enhancement hours per year for design change that is determined to be outside of the scope of the contract. Additional enhancements are considered as change requests and charged at the agreed to hourly rate.

27. Describe your post go-live support capability.

Celtic Response: Celtic will provide on-site go live support to achieve system stabilization. Celtic believes in providing on-going and continuous maintenance and support to DPS. Our 'customer-first' philosophy, attentiveness to our customer's issues (along with our online incident tracking system), will assure you get prompt issue remediation, data cleanup and change management services.

ATTACHMENT F

STATE OF MINNESOTA

DEPARTMENT OF PUBLIC SAFETY

Submitted by
James Harrison of Fast Enterprises, LLC
7229 S. Alton Way
Centennial, CO 80112
Toll Free: 877-275-3278
Fax: 303-773-4099
JHarrison@FastEnterprises.com

RESPONSE TO REQUEST FOR INFORMATION
NUMBER P0701-2000008292
REPLACEMENT OF MOTOR VEHICLE
INFORMATION SYSTEM

Original

FAST ENTERPRISES

FAST ENTERPRISES

May 24, 2018

Kevin Donnan-Marsh, DPS Contracts Manager
Department of Public Safety
445 Minnesota Street
Saint Paul, MN 55101

Dear Kevin Donnan-Marsh,

Fast Enterprises, LLC (FAST) is pleased to respond to Request for Information P0701-2000008292, Replacement of Motor Vehicle System, issued by the State of Minnesota. We believe that partnering with us to implement our commercial off-the-shelf (COTS) FastVS® software represents the best opportunity for the Minnesota Department of Public Safety (DPS) to accomplish its vehicle title and registration system modernization goals. We offer the solution, people, and experience necessary to minimize project risk and provide DPS with a proven solution for complete administration of Minnesota's vehicle title and registration programs.

- **Solution –** Our commercial off-the-shelf (COTS) software, FastVS, is a production-proven solution that meets the needs of motor vehicle agencies and is maintained to the standards expected of a commercial product, including regular upgrades, service packs, and technology innovations.
- **People** – Our project personnel are knowledgeable in configuring FastVS so that it meets the business and technical objectives of agencies that administer vehicle title and registration programs.
- **Experience –** Every FAST software implementation project for motor vehicle agencies has been delivered on time and on budget. We have successfully implemented our software for vehicle title and registration programs for the states of Arkansas, Mississippi, New Mexico, North Dakota, Oklahoma, Utah, and Washington. Additionally, the motor vehicle agencies of Colorado, Georgia Maryland, Massachusetts, Michigan, Nebraska, and Oregon are currently implementing our software. This track record of success is unmatched in the industry.

We appreciate the opportunity to provide this response to the State and look forward to providing the State with a demonstration of how our software and services can meet your system modernization goals.

Sincerely,

James Harrison
Partner - Fast Enterprises, LLC

7229 S. Alton Way
Centennial, CO 80112
Phone: 877.275.3278 | Fax: 208.433.9863
JHarrison@FastEnterprises.com
www.FastEnterprises.com

RFI Details (cont.)

Event ID	Format	Type	Page
P0701-2000008292	RFI	RFx	3
Event Round	**Version**		
-	1		
Event Name			
Replacement of Motor Vehicle Information System			
Start Time	**Finish Time**		
04/30/2018 15:00:00	05/31/2018 16:00:00		

In order to participate in this event YOU MUST BE REGISTERED as a vendor and have ACCEPTED the event electronically.

FAST ENTERPRISES LLC
7229 S ALTON WAY
CENTENNIAL CO 80112
United States

Submit To: Public Safety Department
445 MINNESOTA ST
STE 126
ST PAUL MN 55101-2156
United States

Contact: Donnan-Marsh,Kevin A
Phone: 651/201-7006

Email: Kevin.Donnan-Marsh@state.mn.us

Bidder Information

Firm Name: Fast Enterprises, LLC

Name: James Harrison **Signature:** James G Harrison **Date:** May 24, 2018

Phone #: (877) 275-3278 **Fax #:** (303) 773-4099

Street Address: 7229 S. Alton Way

City & State: Centennial, Colorado **Zip Code:** 80112

Email: JHarrison@FastEnterprises.com

Vendor Input
Framework Vendors

A "Framework Vendor" is defined as having an existing motor vehicle software solution. DPS is seeking the following information from Framework Vendors:

1. Describe your Motor Vehicle framework.
    a. What business functions does your framework cover?

Our COTS FastVS software was developed specifically for the administration of vehicle title and registration programs. As illustrated in the following table, FastVS provides all the functionality necessary for core business functions and support processes, as well as built-in tools used to manage the software implementation process, to provide a single and integrated solution for meeting Department of Public Safety (DPS) process enhancements and system-modernization initiatives. All core functions are integrated in FastVS and available in base-configuration mode when the software is installed at the beginning of the project. Through configuration, these core functions are tailored to meet an agency's specific requirements, providing full FastVS functionality upon production rollout. As such, our implementation approach is based on rollout of FastVS to provide full functionality of the software on the first day of production.

FastVS Consists of Seven Fully Integrated Modules and Subsystems

FASTVS

Vehicle Services
- Title
- Registration
- Inventory
- Permits
- Dealer Management
- Impounds
- Fleets

Management Studio
- Business Rules
- Implementation Toolkit
- Operations Support
- Security
- Interfaces
- Help

Customer
- CRM
- e-Services
- Appointments
- Correspondence
- Professional Licensing

Financials
- Cashiering
- Payments
- Billing
- Compliance
- Refunds
- Accounting

Information
- Dashboard
- Reporting
- Data Mart
- Query
- Data Warehouse

Special Functions
- Imaging
- IFTA
- IRP

Workflow
- Work Management
- Case Management

b. Describe the technical architecture behind your code base/framework, your experience with this code base, and the platforms, software languages, databases, and other key technologies used by/with your code base/framework.

FastVS is based on [redacted] divided into layers, with each layer performing specific tasks in the system. FastVS is a service-oriented enterprise application that operates in a [redacted] based environment and architecture. The core architecture utilizes the [redacted] to process secured web services. FastVS was built using the [redacted] is the preferred language for any custom code extensions. The application stack requires [redacted] and the database management system is [redacted].

c. What database(s) does your framework use? What others can it use?

[redacted] is the preferred and recommended database platform. [redacted] is also supported.

i. What is the licensing model for the database?

The licensing model for [redacted], and this is typically a cost born by the agency.

d. In what states have you fully implemented your framework? Fully or partially?

The following U.S. states have completed FastDS-VS implementation projects:

- Arkansas Department of Finance and Administration (driver and vehicle services)
- Utah State Tax Commission (vehicle services)
- Tennessee Department of Safety and Homeland Security (driver services)
- Oklahoma Tax Commission (vehicle services)
- New Mexico Tax and Revenue Department (driver and vehicle services)
- North Dakota Department of Transportation (vehicle services)
- Mississippi Department of Revenue (vehicle services)

The following U.S. states are in production with a portion of FastDS-VS, but are still engaged in active implementation projects:

- Washington Department of Licensing (driver and vehicle services)
- Colorado Department of Revenue (driver and vehicle services)
- Massachusetts Department of Transportation (driver and vehicle services)

e. In what states, if applicable, are you in the process of implementing your framework?

In addition to the three states previously mentioned, the following U.S. states are currently engaged in FastDS-VS implementation projects:

- Oregon Department of Transportation (driver and vehicle services)
- Michigan Department of State (driver and vehicle services)
- Georgia Department of Revenue and Department of Driver Services (driver and vehicle services)
- Nebraska Department of Motor Vehicles (vehicle services)
- Maryland Motor Vehicle Administration (driver and vehicle services)

- Minnesota Department of Safety (driver services)

f. What investment has your company made in your framework? Or was your framework developed specifically for another state? Did you invest in your framework independently of a contract with a state?

FAST's first product is GenTax, our solution for integrated tax, registration, and license administration. GenTax first entered production for the British Columbia, Canada, Ministry of Finance in 1999. In 2011, the Arkansas Department of Finance and Administration, which uses GenTax for tax administration, asked FAST to leverage the FAST core architecture to manage two additional lines of government business: driver licensing and control and motor vehicle titling and registration. The result was a new FAST software product, FastDS-VS, which has been highly successful in the driver- and motor-vehicle-administration market. FastDS-VS is in production, or is being implemented, for 16 U.S. state motor-vehicle agencies. In addition, the FAST Development Center has a team of developers dedicated to continuous improvement of the core FastVS product.

g. What are your plans for future investment in your framework?

FAST is committed to providing agencies with continuous adaption and improvement. Our core software architecture has more than a 17-year history of routine service packs and periodic software upgrades. For example, our first FastDS-VS client, the Arkansas Department of Finance and Administration, initially implemented FastDS-VS Version 9 and has since upgraded to Version 10. This commitment provides our clients with a perpetually modern solution based on current technology and industry best practices. We regularly solicit and receive input for suggestions for changes, revisions, and enhancements from a variety of sources:

- Ongoing projects – Clients communicate new features and functions they would like to see, as well as different ways to implement current functions.
- New implementation projects – Clients and project team personnel provide suggestions during FAST implementation projects.
- Market analysis, market trends – Our personnel watch and analyze the market to ensure the product is at the forefront of the market. We also look at trends in the government and commercial markets to see what new and innovative features can be added to the product.
- Technology advances – We keep abreast of new technologies and ensure the product is taking advantage of proven innovations.
- User groups – Input and ideas are received from our annual users' conferences.

Suggestions from these sources are consolidated and prioritized. The ultimate decision on what is included in a new version is determined by leadership in the FAST Development Center. The content of each release is determined by analyzing potential changes and prioritizing them as follows:

- Priority 1
  - Software fixes.
- Priority 2
  - New functions requested by a client agency. Each function is analyzed for its potential benefit to other customers. Those deemed applicable to multiple customers may be added to the software product.
  - New technology opportunities.

- Priority 3
  - Enhancements to existing functions. Usually requested by customers at our annual user conferences or through other customer requests that have been submitted in the form of Solution Requests.
  - New categories of functionality or product accounts.

h. What browsers do your framework support?

FastVS is a web-based application that runs in a browser. No installation is required as long as a supported browser running JavaScript is installed on client machines. This allows FastVS to run on most mobile devices and desktops/laptops regardless of their operating systems. The most current version of a web browser is recommended for internal users.

Supported browsers include:

- Internet Explorer – Version 10+
- Edge – Version 25+
- Safari – Version 6+
- Chrome – Version 40+
- Firefox – Version 30+
- Opera – Version 30+

Older web browser versions are supported for public users interacting with the e-Services portal.

i. What interfaces with standard government agencies/NGO organizations does your approach already support?

The Interfaces subsystem contains a suite of tools to manage web services, file transmission, and other interfaces to external systems. Interfaces with external data-exchange systems that are common to most motor vehicle agency operations are maintained as part of the core FastVS software. These include interfaces with systems maintained by the American Association of Motor Vehicle Administrators (AAMVA) and the federal government. Common interfaces include:

- **National Motor Vehicle Title Information System (NMVTIS)**
- **Vehicle Records** - FastVS can transmit vehicle records through web service or secure FTP files. Records can be sent individually or in bulk to external agencies and third-party intermediaries
- **Inventory Ordering** - When an agency requires new inventory of plates and decals, the Inventory subsystem can generate an order that is transmitted through interface with suppliers.
- **Specialty Plate Sales Reports** - Reports of sales of specialty plates can be sent to sponsoring organizations through secure FTP.
- **Insurance Verification** - FastVS supports multiple types of interfaces with insurance companies, and web-service interfaces between an agency's legacy system and insurance companies can be recreated in FastVS.
- **Vin Decoding** - During new registration transactions, FastVS can interface with third-party VIN decoding software to collect and record vehicle attributes (such as vehicle year, make, model, body type, MSRP, and so on).

- **Vehicle Valuation** - FastVS can interface with third-party vehicle-valuation software to obtain the market value of vehicles. This information can be used to determine the minimum value for calculating sales tax as part of new vehicle registrations.
- **GIS** - To calculate local sales taxes during vehicle registration, FastVS can interface with a Geographic Information System (GIS) to identify addresses and taxing jurisdictions associated with vehicles.

j. What is the average number of concurrent users in other state implementations?

FastVS is designed to not be constrained by the number of concurrent user sessions. We have conducted load simulations with our testing tools that demonstrate FastVS supports, at a minimum, more than 2,000 concurrent users per web and application server running in a physical deployment (virtual server capacity may be less depending on host resource allocation.) User-perceived performance is influenced by internal and external web traffic. Web traffic from external user transactions is less demanding than internal transactions, so the concurrent number of users per web and application server for external users are even higher.

k. Does your implementation have any third-party SAS dependencies?

No.

l. Describe how your framework provides data to third-party consumers.
   i. What protocols are used?

FastVS is an event-based architecture and can consume and expose web services for exchanging data or exposing specific functionality from APIs. FastVS also supports service-oriented architecture (SOA) via web services and external interfaces such as:

- XML
- SOAP 1.1 or 1.2
- .NET Windows Communication Foundation (WCF)
- OASIS WS-Security standards
- Compatible with Universal Description, Discovery and Integration (UDDI)
- Representational State Transfer (REST)

FastVS also includes the FAST [redacted] a full-service integration layer that is loosely coupled with FastVS to provide robust services for integration with other internal and external applications. Data exchanges with external systems are funneled through the system transparently and are presented to users within the FastVS user interface--meaning most users do not realize that they are accessing an external system.

The FAST Gateway provides the following features:

- [redacted]

- [redacted]

m. Describe how your framework handles the consumption of third-party data feeds.

FastVS is an event-based architecture and can consume and expose web services for exchanging data. Please see our response to question L, above.

n. Describe how your framework supports self-service for anonymous users.

The e-Services subsystem allows requests to be submitted without creating account credentials. These requests are referred to as non-authenticated requests and are available for anyone visiting the website. Requests processed at this level can utilize information for validation, but, to prevent fraud, they do not provide immediate validation results back to the customer. Core requests like Forgot Password and Forgot Username requests can be submitted without logging in.

o. Describe how your framework supports review and approval workflows.

The Case Management subsystem supports multi-stage business activities such as review and approval workflows. A case is a business activity comprised of several steps, stages, decisions, and actions that must be taken to complete an activity. The agency defines the stages and rules to be followed when performing a given activity. The system monitors the progress of the case and directs it to the attention of appropriate users, according to agency-specified business rules. At each stage of the case, agency users (or system automation) can perform actions such as creating letters to send to customers, generating work items to assign work to others, updating the case record, and changing the stage to reflect case progress. Based on rules and events that occur during the life of a case, FastVS can automatically create letters to seek customer input, announce decisions, or record other aspects of the case. Based on a case type's business rules, work items are created automatically at particular stages to direct users to take actions or make decisions.

2. Describe the authentication/authorization/user-identity management features in your code base/framework.

a. If not within the framework, with what products does your framework interact?

FastVS supports integration with an external [redacted] such as [redacted] for user authentication. When a user logs into the system, the system uses the [redacted] application programming interface to communicate with Active Directory for authentication. This feature enables single sign-on across the enterprise and central management and enforcement of authentication policies. Leveraging an agency's [redacted] infrastructure is the preferred method of providing authentication to FastVS.

Alternatively, FastVS comes equipped with internal user authentication functionality. When internal user authentication is used, password strength is enforced through configurable password complexity and management rules.

b. Minnesota has a centrally-managed enterprise IAM implementation. Characterize the feasibility of leveraging that system for authentication and authorization.

FastVS supports centrally-managed enterprise IAM services. Federation identity is supported by interfacing with an external Federated Identity Management (FIM) system by sending authorization messages using Security Assertion Markup Language (SAML). FastVS roles are managed within the integrated security manager. FastVS provides role-based security access and grants user access to functionality using security groups. Authorization via security groups and roles are managed within the application and not determined by an external authorization provider such as IDAM/IAM.

3. Describe your use of third-party COTS products for the following capabilities:
   a. Rules definition and management
   b. Work flow definition and management
   c. Case management
   d. Reporting
   e. Document management
   f. Telephony & IVR
   g. E-forms
   h. E-learning
   i. Financial accounting and reporting
   j. Inventory management
   k. Change, Release, and Service Desk Management

All the listed capabilities, except for Telephony & IVR, are provided by FastVS and do not require third-party COTS products. Interfaces between FAST's core framework architecture (including GenTax, FastUI, and FastDS-VS) and third-party IVR systems are in production for multiple FAST client agencies. The FastVS product architecture is designed for ease of implementation of interfaces with other systems and software products through use of common, mature, and open interface mechanisms. In addition, we utilize the FAST Central Repository (FCR) to perform change, release, and service desk management capabilities.

4. Describe how your framework handles Federal mandates.

Agency developers have complete access to FastVS business rules—the parameters that allow an agency to tailor the software to meet existing, new, and evolving business requirements. Our experience on multiple projects has shown that approximately 80% to 90% of agencies' administration functions can be implemented in our software through configuration. Our clients are therefore able to implement the vast majority of their business requirements in FastVS with no need for development of custom code. Agency personnel at many FAST project sites are involved in configuring our software to accommodate federal mandates, legislative changes, and new-year fee and procedural changes, which can be implemented in a fraction of the time required under our clients' legacy systems.

5. Describe your approach (architecture and design considerations) for integration with internal (e.g. State financial system) and external (e.g. AAMVA) systems to a DMV system.
Please see our responses to question 1.I and question1.L for our approach to interfacing with internal and external systems.

6. Describe how your framework accommodates ADA requirements.
FastVS is designed for Americans with Disabilities Act (ADA) compliance by allowing easy navigation using keyboard shortcuts and can be configured for use with screen readers, such as JAWS® for Windows®, to provide accessibility by visually impaired persons. Since our solution is browser-based, it can be displayed using ADA-compliant features incorporated into the latest versions of major web browsers.

7. Identify whether your code base/framework supports multiple languages (e.g. English and Spanish). How is this supported by your code base/framework?
FastVS supports multiple languages through configuration. All screen text in FastVS (for internal users) and e-Services (for external users) is created from reference table "decodes" that tell the system what to display. These decodes can be configured for multiple natural languages (for example, English or Spanish) based on user preferences. Language decodes are also used to customize terminology to the agency. Customers can also indicate their natural language preference for correspondence and, if the correspondence template exists in that language, it is used automatically. Translation is performed manually using a built-in language tool that centralizes all decodable areas of the system into one location. This tool also quickly highlights any areas of the system that are missing decodes.

a. If multiple languages are supported, how are translations managed?
Translation and management of non-English screen text will be the responsibility of DPS agency staff.

8. Describe your typical point-of-service hardware configuration.
The FastVS technology architecture is configured using multiple Intel-based, high-performance servers running in a virtual host cluster for high-availability and load balance. Each virtual "guest" utilizes [redacted] as the preferred server operating system and [redacted] 2017 as the [redacted]. Our solution is based on an [redacted] architecture logically divided into layers, with each layer performing specific tasks in the system. The solution is designed to have no single point of failure. Redundancy is provided by using a server cluster or by having multiple servers that perform the same function configured for load-balancing. Virtual host servers are balanced for scalability and reliability. The load on each host depends on the operating environment; however, our typical approach is to never overload a host server with too many virtual guest machines. Virtual guest machines are strategically placed to run on the appropriate host server based on load requirements. It is recommended FastVS use the existing hardware configuration provided for the current FastDS project.

9. Describe your requirements/expectations regarding network or management of the computing infrastructure at the point of service (e.g. Must all workstations be members of an Active Directory Doman?).

It is not required for standard user workstations to be members of an Active Directory domain to operate FastVS through a web browser. FAST assumes the technical infrastructure hosting FastVS will meet, exceed, or contain the following:

- 100/1000 MB (1GB) Ethernet for client workstations.
- 10000MB (10GB) Ethernet for servers connected to enterprise-level 10GB network switches configured with multiple VLANs and/or security zones for isolation.
- Routing and firewall services.
- Security and Intrusion Prevention System.
- Network devices configured for high-availability.
- Sufficient power, rack space, airflow, and cooling.
- Secured facility to house hardware for the primary and disaster recovery sites.
- Tape Backup Library or other modern enterprise backup solution. FAST assumes the new system would use the Agency's existing backup solution.
- Anti-virus software not included. FAST assumes the new servers would use the Agency's existing anti-virus and security software solution.
- Windows Client Access Licenses (CAL). FAST assumes the Agency already has sufficient Windows CALs to access new servers.
- Network Load Balancing (NLB) - recommend F5 or other enterprise-level NLB solution.
- The communication link used to synchronize and/or replicate disaster recovery data should have a minimum of 1GB available bandwidth. A 10GB bandwidth connection is preferred and recommended (if available) based on replicated data requirements.
- Security Information and Event Management (SIEM) tools not included. FAST assumes the new system would use the Agency's existing SIEM tool(s).
- Our solution typically utilizes our client's existing high-volume printer(s) for batch printing. If our client does not currently have a high-volume printer, we recommend using the Xerox DocuTech 128 HighLight Color printer rated at 128 pages per minute. Printer models also depend on specific site needs and demand.
- The Storage Area Network (SAN) and disk storage configuration must meet or exceed performance requirements of 50,000 IOPS Random Reads (8K pages), and 30,000 IOPS Random writes (8K pages) verified by the DiskSPD IO utility against 4x256GB data files using a single instance of [redacted] The DiskSPD tool must be configured with a 30% random write workload.
- Virtualization hypervisors are not oversaturated and sufficient virtual server resources are dedicated to the proposed solution for optimal performance.
- Access to Development and Testing environments. The FAST technical team requires direct access to development and testing environments.

10. Describe the production deployment infrastructure options, including which components can be cloud-hosted, and the scalability characteristics of the implementation including but not limited to:

a. Database

[redacted] is the preferred database platform to use for FastVS. It is recommended the production environment contain three (3) database servers configured for high-availability and reporting. FAST does not support separating components between cloud-hosted and on-premise deployments. FAST offers hosting services for all our applications. Our hosted applications are managed and deployed by FAST and designed to meet agency business requirements and service level agreements.

b. Load Balancers

FastVS leverages load balance functionality designed within the architecture and also uses two or more enterprise-class network load balancers, such as F5 devices. Load Balancers distribute network traffic to multiple web servers for increased performance, security, and availability. The load balancing tier ensure web requests are routed to the proper web server for processing.

c. Application Tier

The FastVS architecture contains an application, or business tier. The business tier is the inner middle-tier of the application where all the business rules are implemented and where all database actions are performed. Messages are passed between the web tier and business tiers using [redacted] which is configured to use HTTP protocols and uses industry standard SSL security. The business tier runs on one or more Windows server machines. Business objects (application server DLL components) apply business logic and request database queries and updates to the data layer. Only the business objects running on the application servers communicate with the database servers. The number of application servers are variable and determined by the system load to be supported. It is at this layer that the processing scalability of FastVS is implemented by installing multiple application servers. Application servers support horizontal scaling by providing the ability to add additional servers into a pool of load balance member servers to help with increased performance demand.

d. Web Tier

The web tier, the outer middle-tier of the application, is an intermediary layer which acts as a communication interface between the client and business layers. This layer may also be referred to as the web servers. This layer typically resides within a DMZ (sometimes referred to as a perimeter network). The web layer hosts services which create the HTTP endpoints to which users submit calls. These endpoints then "forward in" the requests via secure and encrypted TCP packets to the application servers on the business tier which will then process the requests. Requests are then returned to the client layer in the reverse order. The number of web servers are variable and determined by the number of users required to support the system.

e. Networking and/or bandwith constraints

FastVS is optimized to run efficiently over varying bandwidth speeds to process compressed and encrypted web requests between client desktops and the web servers. The optimal bandwidth for

remote office connections to the Internet should have bandwidth to support a minimum of 10.0 Mb per 25 people. Example: 50 people using the application at a remote office location would require a minimum 20 Mb connection. For additional network constraints and assumptions, please see our response to question 9, above.

f. Document management

The Imaging subsystem provides integrated functions for managing image files that are input in FastVS through an agency's third-party scanning and imaging systems. It provides multiple capabilities for integrated digital-document imaging and is compatible with industry standard formats such as TIFF, Bitmap (BMP), PCX, JPEG (JPG), PDF, and XIF, and supports online and batch image processing. Functions of the Imaging subsystem include automatic indexing, manual indexing, establishing pre-defined zoom regions, zooming images manually, annotating all or a portion of images, printing images, key-from-image data entry, creating image-based workflow, redaction, and displaying images side-by-side in the same window.

11. Describe the underlying approach to your framework (e.g. customer centric, vehicle centric, etc.).

Whether transactions are performed by agency personnel in the office or by customers using e-Services, FastVS maintains a single view of the customer and common business rules/computer logic across all aspects of the solution and channels. Through use of a single customer record, FastVS provides a unified view of the relationship between customers and vehicles. Vehicles can be associated with more than one owner, owners can own different vehicles over time, ownership can frequently change during a vehicle's lifetime, and there is full integration between vehicle title and registration records. FastVS maintains the relationship between owners and vehicles while also maintaining the individual integrity of each entity. This information is readily accessible through the FastVS customer springboard, which provides a summary view of key information about the identity, credentials, and vehicles associated with a customer. Information is logically categorized and presented in tabs and subtabs and users can drill down with links to further information.

FastVS eliminates the siloed structure of legacy systems and manages the relationship between owners and vehicles while maintaining the integrity of each record for individuals, vehicles, and business entities. For example, during the vehicle registration process, one or more owners can be associated with a vehicle through capture of unique owner-identification information, such as a driver license number. Once ownership relationships are established, FastVS presents a unified view of owners and vehicles on one screen. As circumstances change, FastVS tracks modifications to these relationships while also maintaining a history of all changes. For example, users can see the complete history of a vehicle with all the individuals and businesses that have had, or still have, an ownership interest in the vehicle.

12. What software third-party licenses, products or services would Minnesota need to acquire or possess in order to use your framework. In particular, what third-party components does your framework rely on?

FastVS is a [redacted] and operates within a [redacted] for all components and architectural tiers. The number of third-party licenses required to fully operate FastVS are limited to the following products:

- [redacted]

13. Describe your experience with release implementations with systems of this size.

Our current motor vehicle agency clients are shown in the following table.

FastDS-VS Projects and Client Agencies

STATE AGENCY	SOFTWARE	POPULATION	# LICENSE & ID	# VEHICLES REGISTERED	DRIVER IN PRODUCTION	VEHICLE IN PRODUCTION
Arkansas Department of Finance and Administration	FastDS-VS (driver and vehicle services)	3.0 M	2.5 M	4.2 M	Sep 2012	Sep 2013
Utah State Tax Commission Division of Motor Vehicles	FastVS (vehicle services)	2.9 M	NA	3.0 M	NA	Oct 2013
Tennessee Department of Safety and Homeland Security Driver Services Division	FastDS (driver services)	6.5 M	6.1 M	NA	Feb 2015	NA
Oklahoma Tax Commission Motor Vehicle Division	FastVS (vehicle services)	3.9 M	NA	4.4 M	NA	Mar 2015
New Mexico Tax and Revenue Department Motor Vehicle Division	FastDS-VS (driver and vehicle services)	2.1 M	1.8 M	1.4 M	May 2015	Sep 2016
North Dakota Department of Transportation Motor Vehicle Division	FastVS (vehicle services)	0.7 M	NA	1.2 M	NA	June 2016
Washington Department of Licensing	FastDS-VS (driver and vehicle services)	7.0 M	6.2 M	7.0 M	June 2018	Dec 2016
Colorado Department of Revenue Division of Motor Vehicles	FastDS-VS (driver and vehicle services)	5.4 M	3.9 M	5.4 M	Feb 2017	Aug 2018

FastDS-VS Projects and Client Agencies

STATE AGENCY	SOFTWARE	POPULATION	# LICENSE & ID	# VEHICLES REGISTERED	DRIVER IN PRODUCTION	VEHICLE IN PRODUCTION
Mississippi Department of Revenue	FastVS (vehicle services)	3.0 M	NA	2.7 M	NA	Q4 2017
Massachusetts Department of Transportation	FastDS-VS (driver and vehicle services)	6.75 M	5.0 M	5.3M	March 2018	Oct 2019
Michigan Department of State	FastDS-VS (driver and vehicle services)	9.9 M	8.1 M	9.5M	Feb 2021	Feb 2019
Oregon Department of Transportation	FastDS-VS (driver and vehicle services)	4.1 M	3.1 M	4.6 M	Jul 2020	Jan 2019
Georgia Department of Revenue and Department of Driver Services	FastDS-VS (driver and vehicle services)	10.1 M	8.1 M	10.1 M	Jan 2021	May 2019
Nebraska Department of Motor Vehicles	FastVS (vehicle services)	1.9 M	NA	2.5 M	NA	Oct 2019
Maryland Motor Vehicle Administration	FastDS-VS (driver and vehicle services)	6.0 M	4.2 M	5 M	Oct 2021	May 2020
Minnesota Department of Safety	FastDS (driver services)	5.4 M	4.6 M	NA	Oct 2018	NA

14. Describe the development methodology(ies) that you would use for this system.

The FAST Implementation Methodology was designed for the implementation of our commercial off-the-shelf (COTS) software and provides a structure for successful implementation. It also facilitates work by providing a common and consistent language, by leveraging existing examples of work products, and by building on a repository of best practices and lessons learned.

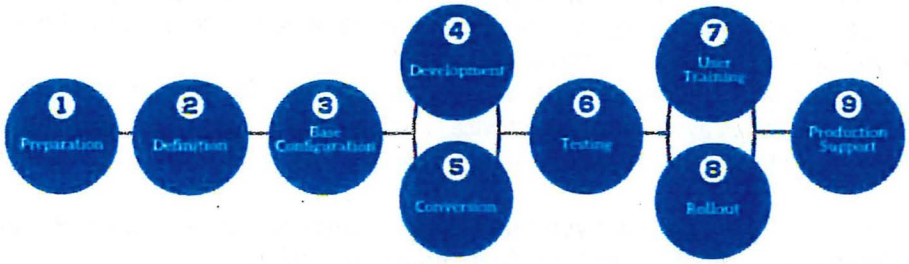
A recurring theme in the methodology is the use of iterative cycles to complete tasks. The underlying philosophy is to perform small increments of work, submit those for review and verification, incorporate the feedback from the reviews into the next small increment of work, and continue in this manner until the work products are deemed acceptable. This approach ensures that incremental adjustments or changes required to stay on track can be made without retracing too many steps.

The FAST Implementation Methodology:

- Emphasizes working with actual system components rather than on documents describing the components.
- Acknowledges that in systems implementation, change is inevitable, and communication of process changes increases user acceptance.
- Involves users early and often in an intensely collaborative project environment.
- Empowers project participants to make decisions. A bad decision can be corrected; no decision translates to zero progress.
- Allows for project phases (shown in the chart below) to be executed out of sequence, to overlap, and to run in parallel.

The FAST Implementation Methodology is comprised of the nine phases shown in the following figure.

Phases of the FAST Implementation Methodology



1. The Preparation Phase develops the roadmap that defines the execution of the FastVS implementation project.
2. The Definition Phase is the first step each team takes in defining the work to deliver the lines of business.
3. The Base Configuration Phase structures and implements the starting point for the rollout. Once the baseline is in place, the system supports basic navigation and business function processing.
4. During the Development Phase, the project team uses definition items identified in Definition Phase to produce work packages that specify parameters, establish options, define thresholds, and perform other types of configuration or development of site-specific extensions.

5. The Conversion Phase provides the new system with a base set of data with which the business functions operate.
6. The Testing Phase ensures that the production system can meet the business needs in a robust and stable manner. This includes identification of system and specification instabilities or issues.
7. During the User Training Phase, user documentation is prepared and users receive training on use of the system. This includes organizational change management activities, which start early in the project to transition the organization for acceptance and use of the solution.
8. The Rollout Phase delivers the lines of business to production.
9. The Production Support Phase provides desk-side support and solution-specific help-desk support during the initial production period and operates and maintains the solution in production over the long term.

15. Based on your experience with other states, what is the feasibility of combining a legacy mainframe system previously used with a current web-based system?

Based on our experience with other states, combining a legacy mainframe system with a current web-based system is not a feasible or cost-effective modernization approach. We believe this approach will unnecessarily increase system complexity, maintenance support burden, interface development, upgrade and training requirements, and overall system cost. FastVS provides all the functionality for core business functions and support processes, as well as built-in tools used to manage the software implementation process, in a single, integrated application.

FAST can perform conversion from multiple systems including legacy and web-based systems, but the data would be converted into FastDS-VS and would not reside in MNLARs. Our proposal would be to add FastVS to the FastDS instance currently being implemented for DPS.

16. What is the typical time frame for the design, development, and implementation of a motor vehicle information system similar in size? For example, based on your average customer's motor vehicle system, what is a realistic, estimated timeline or schedule from the time a contract is signed through implementation and troubleshooting?

Based on our experience with vehicle services system implementations for agencies of similar size and with a similar project scope, an average vehicle services implementation would consist of an 18-month project schedule from project start through implementation.

17. What preparation or planning have you seen States complete - or not complete - prior to starting an implementation project and how did it impact the project?

In our experience, one of the most important activities States can complete prior to selecting a vendor and starting an implementation project is to learn from other jurisdictions' experiences and thoroughly check references. Following are some of our recommendations:

- Consider requiring client references that are similar agencies, of similar size, with similar scope.
- Talk to other agencies in detail about their solutions and their implementation experiences; don't limit your questions to pre-determined, fixed questions that don't allow you to follow-up on information provided by the reference.
- Compare "as proposed" to "actual" – What cost did the vendor bid in their proposal? What timeframe did the vendor bid in their proposal? Did the total proposed scope get implemented?

What was the final actual cost? How long did the implementation actually take? What are the reasons for differences?

- Consider requiring contact information for all the vendor's client sites—don't just talk to those sites that the vendor lists as "reference sites."
- Consider carrying out site visits so you can see the solution in production and talk face-to-face with references.

18. From your perspective, what could be included in a RFP to contribute to project success?

We recommend that agencies provide the following information in an RFP:

- A complete list of the functionality/processes that will be implemented, along with the following:
  - A high-level overview of the functionality/process, including business and processing cycles.
  - Any conditions or factors that may have an impact on the implementation date.
  - Current legacy location. If functionality is spread over multiple legacy systems, please note which functions reside in each legacy system.
  - Basic metrics, such as:
    - Number of users
    - Volatility of the user base
    - Processing volumes for major business functions
  - Significance of information – provides a foundation for scoping the solution, including workflow and conversion functionality and insight into process groupings if the full implementation is to occur over multiple project phases.

- A representative list of specific features, by function, and an indication of whether the features are mandatory or desirable. The emphasis is on "representative"—it is not necessary to build an exhaustive list of features.
  - Significance of information – provides insight for mapping functional features into the solution and to identify any potential site-specific development efforts.

- A list of existing systems that will be retained.
  - Significance of information – identifies additional interfaces that may be needed and areas in which legacy system modifications may be required.

- Anticipated project schedule—what is the agency's expectation for the project duration, including follow-on warranty and/or maintenance periods?
  - Significance of information – Validates schedule and staffing expectations and supports the identification of potential scheduling accelerators or constraints.

19. If DPS decides to issue a RFP, would your company be interested submitting a proposal? If not, why not?

Yes.

20. Describe your approach to software releases.

Our FAST Development Center in Centennial, CO maintains the core software code used by all FAST client agencies. Software updates can appear in one of three forms:

- Hot Fixes – We may recommend that a site apply critical changes to a core component as soon as possible. Critical changes are those required for the client to continue doing business in a reasonable fashion. Hot fixes contain documentation, components, and scripts for any associated database changes. We release hot fixes on an as-needed basis.
- Service Packs – We change core components periodically (typically on a quarterly basis). These changes take the form of service packs. Service packs contain documentation, components, and scripts for any associated database changes.
- New Versions – New versions (upgrades) of the core product are released periodically. A new version typically includes both functional enhancements and changes that leverage the evolution of the implementation platform technology—for example, new versions of operating systems and database management systems.

21. Describe, based on your experience with other States, a realistic estimate of effective total cost of ownership.

a. Is ongoing support, e.g. maintenance, from your organization required/recommended, and what is the expected/recommended size of that staff and average hourly rates? Can that cost be reduced by knowledge transfer to the state's IT staff?
b. What is the average or estimated cost of development or customization of an existing system?
c. What are ongoing licensing fees for your framework, including the frequency, current cost(s) and duration?
d. What is the nature and estimated costs of required or recommended non-production environments?
e. What is the estimated, average run cost for a year on a typical deployment?

Our responses to items a, b, c, d, and e is included in the following narrative. The price of the FAST solution is primarily made up of six components:

- FAST software license
- Implementation services
- Third-party software
- Hardware
- Ongoing maintenance costs
- Ongoing support costs

FAST Software License

The FAST software license fee is based on factors such as the functions to be implemented, the approximate number of customers, and the approximate number of users. We do not require precise counts of named or concurrent users. The cost is not dependent on the number of CPUs or servers.

Implementation Services

The cost for implementation services varies depending on factors such as the scope of the system,

the number of users, and the duration of the project. Other factors, such as the agency's contractual terms and conditions, can have a significant impact on the cost for implementation services.

Third-Party Software

FAST software requires certain third-party software such as [redacted] and a few others, for specific purposes such as infrastructure management or the development of site-specific components. The final price for third-party software depends on several factors, such as whether the agency has pre-existing licenses/agreements that can be used for the system, the volumes of accounts and transactions that will be converted and processed, the number of system developers, and so on.

Hardware

FAST software requires servers, a storage area network (SAN), and other hardware to support the production, development, test, training, and staging environments. The final price for hardware similarly depends on factors such as whether the department has pre-existing resources that can be used for the system, the volumes of accounts and transactions that will be converted and processed, and the functions implemented (such as the FAST data warehouse, imaging, etc.).

Ongoing Maintenance Costs

The annual maintenance fee varies by client and is based on factors such as the agency's preferences related to level of maintenance, the approximate number of users, the modules implemented, and other items. For estimating purposes, the annual software maintenance fee (also known as Level 1 Maintenance) is typically 20% – 30% of the initial license fee.

Ongoing Application Support Costs

Application support costs can vary greatly depending on the agency's needs and capabilities. Agencies have the option of providing application support themselves and/or procuring support services from FAST. For budgeting purposes, we recommend planning on some level of on-site FAST support so that funds are available if needed.

We strongly encourage our clients to view a new system as a significant undertaking that warrants continued investment to ensure the system keeps up with the business and technology landscape. One of the primary advantages of utilizing a COTS solution is that it provides an agency with the opportunity to keep its system up to date and to avoid the expensive and time-consuming build-and-replace cycle that has been the norm for many IT systems.

Other Cost Drivers

The basic considerations that impact our estimates are discussed above. However, there are several other items that could have a substantial impact on costs.

Use of External Project Management/Oversight Resources

We understand that the agency may be required, or feel it prudent, to enlist the services of a contract project manager, an Independent Verification & Validation (IV&V) contractor, an Organizational Change

Management (OCM) contractor, and so on. We strongly urge you to consult with other agencies who have used these types of services—as well as those who have not—to understand the pros and cons associated with their use as part of an implementation project.

We strongly believe there is no correlation between use of these ancillary services and project success. In fact, use of these services on a number of other vendors' projects did not prevent significant project delays or cancellation. Furthermore, every FastDS-VS implementation project has been delivered on time and on budget, and the majority of our projects have not involved the services of a contract project manager, IV&V contractor, OCM contractor, and so on.

These ancillary services can also be very expensive. In addition to the out-of-pocket cost to hire the contractors, FAST is compelled to increase its cost to cover the additional time and effort associated with the overhead that is generated by these ancillary service providers. In most cases the extraneous meetings, tasks, and documentation required by these contractors do not add value to the system that is ultimately delivered.

Contract terms and conditions

Terms and conditions such as retainage, performance bonds, liquidated damages, service credits, and so on. will have an impact on our pricing. Our estimates are based on negotiating a contract with reasonable, mutually-beneficial terms and conditions. If a contract has terms that are especially one-sided, then that will be reflected in the pricing.

Some terms can even prevent a company from bidding. Liquidated damages and large bond amounts can be impossible for medium-sized companies. If a performance bond is necessary, consider the following:

- Subject only services to a bond; hardware, software license, and software maintenance should be excluded from bonding
- Tie the bond value to the value of the single phase of work in progress
- Permit the bond to take various forms (cash, letter of credit, surety)
- In lieu of a bond, consider a percentage hold-back of payment until that phase of work is delivered successfully; but avoid combining a hold-back with a bond – that is a form of double jeopardy that will inflate the cost of the project

Project Scope

Our estimates are based on providing products and services that are normally included in an integrated vehicle services solution. Our price will be impacted if the vendor is required to provide items that an agency would typically provide such as project office space, disaster recovery site, hardware and services to setup and run scanning, data capture, or printing facilities, and so on.

Project Approach

Our estimates are based on the use of the FAST Implementation Methodology and associated deliverables. This methodology has been used successfully on all our implementation projects. Our costs, and potentially our eagerness to bid, will be affected if the RFP requires the use of another methodology and/or requires different/additional deliverables.

Project Schedule

Another factor in determining the price of our projects is the schedule length. Our price estimate is based on a schedule that is similar to other projects that we have completed successfully. Our price could change if the required schedule is significantly shorter or longer than our normal schedule.

Implementation Approach

We do not typically deliver software functionality in phases. Rather, the base configuration of FastVS is installed within the first few weeks of the project and all required functions and processes are available for all users in all offices and for all vehicles upon rollout to production. This approach mitigates system complexity and delivery risk. An ancillary benefit is that the project team is given the ability to work with FastVS and its many functions within weeks of project initiation and throughout the implementation project, which greatly enhances training and knowledge transfer.

Cost Estimate

The following table outlines high-level cost estimates for implementing and supporting FAST software as the enterprise solution for the administration of the vehicle services program. These estimates are based on the information provided and our experience with similar agencies.

We have provided ranges of pricing for each component. The low end of the range represents the estimated cost assuming contractual terms and conditions similar to our contract for driver services. The upper end of the range represents the estimated cost assuming other terms and conditions.

Category	One-Time Costs	Ongoing Costs / Year	Comments
COTS User Licensing	$3.0m - $4.0m	$0.75m - $1.2m	Annual maintenance fees begin when the software is initially licensed.
Implementation Services	$27.0m - $32.0m	$3.25m - $3.8m	Annual support costs begin after the system goes into production.
Third-Party Software	$1.0m - $1.25m	$0.25m - $0.35m	Annual maintenance fees begin when the software is initially licensed.
Hardware	$0.75m - $1.0m	$0.075m - $0.1m	Hardware purchase prices typically include up to 5 years of maintenance.

Most of our projects are milestone-based. Payment procedures for our projects typically include a payment schedule based on a limited number of project milestones. These milestones are generally associated with a major phase of work. The milestones we typically use are:

- Software Installed
- Definition Phase Complete
- Base Configuration Phase Complete
- Testing Preparation Complete
- Production Rollout

These estimates are based on a project implementation period of 18 months.

22. Describe and identify, and in consideration of your response to Question 21, a breakdown of costs for vehicle services components and functionality, including potential and anticipated costs of integrating a vehicle services information system with a separately developed driver services information system.

Please see our response to question 21 for a breakdown of the costs for all vehicle services components and functionality. Our proposal would be to add FastVS to the FastDS instance currently being implemented for DPS, and there would be no additional costs for interfacing or integrating with a separate system.

23. Describe the recommended size and composition of the state's team supporting the project including DVS business staff, project managers, business analysts, systems analysts, software developers, and systems engineer.

Listed in the following table are recommended State staffing resource levels based on our experience in implementing FastVS for projects of a similar scope and scale. It is important to note that our proposed implementation schedule is not dependent on the recommended number of State IT personnel to complete the project on time and on budget. We have found, however, that agencies that commit similar IT staffing resources typically experience improved IT knowledge transfer and the ability to internally support the application over the long term.

Recommended State Project Personnel: Key Roles and Responsibilities

Role	Responsibilities	Staffing Level (FTE)	Duration
Executive Sponsor	Responsible for securing resources for the project. Acts as a vocal and visible champion, legitimizes the project's goals and objectives, keeps abreast of major project activities, and is a decision-maker for the project. Provides support for the project manager; assists with major issues, obstacles, problems, and policy conflicts.	1	Project duration (part-time)
Project Manager	The project manager functions as a project decision maker. The project manager champions the project,	1	Project duration (full-time)

Role	Responsibilities	Staffing Level (FTE)	Duration
	removes any barriers, and acts as the key point person for all issues regarding the project. The project manager also provides any necessary support to the project and signs off on all deliverables. The project manager works closely with FAST project management to manage day-to-day project activities. The project manager also oversees the agency's resources (both functional and technical) assigned to the project and resolves business decisions and issues arising within the agency's administration		
Subject Matter Experts (SMEs)	Provide business knowledge expertise and contribute significantly to the implementation by describing current and desired outcomes. Make decisions regarding the configuration and escalate decisions requiring senior management resolution. Perform configuration verification. Create system testing (user acceptance) and end-to-end testing scenarios. Perform converted data verification testing. Make detail-level decisions on behalf of the agency in a timely manner on a day-to-day basis. Review training material for completeness and accuracy. Provide project solution expertise to users.	4-6	Project duration (full-time)
Developers	Participate in software configurations. Develop site components. Configure and create letters and reports. Develop interface code. Support the team in the analysis and resolution of batch processing issues.	5-7	Project duration (full-time)
Conversion Extract Specialist(s)	Support conversion activities. Provide legacy system knowledge base. Code automated data cleansing jobs, if practical. Code conversion extracts and programs. Coordinate with staff performing data cleansing. Perform legacy and extract reconciliation.	3	Project duration (full-time)
Testers	Execute system test scenarios. Document any issues found. Perform regression testing as needed.	15-20	Testing Phase (part-time to full-time during relevant testing periods)
Trainers	Attend train-the-trainer sessions. Work with FAST to create the job-specific training material and data. Deliver job-specific user training (Tier 3). Modify online help to	15-20	A few months after start of the Training Phase and through

Role	Responsibilities	Staffing Level (FTE)	Duration
	accommodate agency-specific functionality. Perform desk-side support. Share coordination of testing logistics with FAST counterpart. Schedule agency staff to attend training. Lead and support organizational-change-management activities and analysis.		the first weeks of the Production Support Phase (full-time)
System Administrator/ Network Specialist/ Database Administrator	Provide network and platform support for the project team and users. Provide printing, storage, and hardware support. Participate in environment setup, support, validation, and maintenance. Perform database backups and recoveries. Support performance and end-to-end testing. Maintain database configurations, monitor the health and performance of the database. Assist in tuning and optimizing data layouts.	2	Project duration, and continues as ongoing support (part-time)
Security Administrator	Assist in defining application security. Load and validate access rules. Grant and revoke user access to system functions. Manage security levels and investigate access and permission requests.	1-2	Starts in Testing Phase and continues as ongoing support (part-time)
Operations Support	Schedule and monitor batch processing and printing. Perform first level trouble shooting on batch processing issues. Raise and track problem reports.	1-2	Rollout Phase, and continues as ongoing support (part-time)

24. Describe the nature of your quality assurance program.

The first and perhaps most important level of program control is within our software. FastVS is designed to aid in project implementation, and each functional area within FastVS is designed to help implementers avoid mistakes and develop clean configurations. Standardized configuration approaches also help to minimize quality issues that would otherwise arise from non-standard approaches to configuration. Our project team provides control by overseeing the entire implementation to identify any variances that could introduce risk to the system implementation process and schedule.

We incorporate quality assurance (QA) reviews into all of our software implementation projects. Reviews typically occur at the start of the Development Phase. These reviews focus on two sources of information—people and deliverables. To obtain the "people" perspective, a series of interviews are conducted with staff from the joint project team and from other areas of an agency and its support organizations. Interviews may involve personnel from multiple levels of the organization. Anyone with a connection to the project can potentially contribute valuable information to the review. QA reviews also analyze project work products and the FastVS operating environment, including processes. Analysis can focus on interim and final deliverables, as well as the software operating environments (development, test, pre-production, and production). In addition, team leads conduct frequent code and configuration

reviews to verify that development personnel are adhering to best practices. QA reviews are typically conducted by senior members of FAST.

a. Describe your testing methodology.

The Testing Phase of the FAST Implementation Methodology ensures that the production system is able to meet the business needs in a robust and stable manner. This includes identification of system and specification instabilities or issues. High-level activities of the Testing Phase are outlined in the following text.

6.1 Test Planning – This step begins while the configuration is being confirmed and verified by developers and business staff toward the end of the Development Phase. Testing is focused on testing business functions and outcomes as opposed to individual screens or background processes. The test plan identifies:

- Business test conditions
- Business test cycles
- Approach to executing business testing
- Modules targeted for performance testing
- End-to-end testing approach
- Acceptance criteria

6.2 Business Testing – The purpose of business testing is to ensure functions in testing meet the agency's business needs. Agency SMEs and the implementation teams jointly create test cases and scenarios. The business test scenarios are executed per the test plan. Anomalies identified during testing are recorded and tracked to resolution in the FAST Workbench. During this step, agency testers may identify additional high-impact business-process changes that can be addressed within the change-impact analysis.

6.3 Converted Data Testing – When the system goes live, it will be operating on converted data. Converted data testing is performed to confirm that new system processes execute correctly on the converted data and users can perform the functions necessary to manipulate the converted data.

6.4 Performance Testing – A selection of high-volume items, both online and batch, are selected and used to:

- Plan background processes
- Ensure response times
- Validate network throughput

6.5 End-to-End Testing – End-to-end testing is the final step in the FAST Testing Phase. End-to-end Testing is conducted in the staging environment with an agency's converted data from full mock conversions. This test is often performed in parallel with the final steps of converted-data testing. This testing activity uses the full functionality of the system to replicate daily business activities with converted data. End-to-end testing has the following objectives:

- Ensure that the system correctly executes business functions.

- Ensure that the system correctly executes external interfaces (inputs and outputs).
- Ensure that system functions triggered by a production job correctly execute required functionality.
- Ensure that database adds, reversals, modifications, and tracing are correct.

During end-to-end testing, an emphasis is placed on testing interfaces. The FAST team manager(s) responsible for handling interfaces on the project works closely with the agency to ensure the full participation of the agency's business partners in the testing process. Note that business testing and end-to-end testing constitute what is commonly referred to as user-acceptance testing.

b. Describe the extent to which your testing is automated.

Automated testing tools are not typically used or supported. We prefer allowing agency SMEs and users to test the software to ensure that it meets an agency's business needs. The software was designed to perform certain functions. The intent of testing is to verify that the software, as configured for the agency's programs, provides the anticipated results in the context of the business process.

25. Describe your approach to data migration.

Conversion is an iterative process to extract, convert, purify, verify, and reconcile legacy data for use in the new system. In the Conversion Phase, legacy data from various sources is converted into the target database of our software. Final conversion to the production environment happens once per rollout.

Through a series of mock conversions in environments separate from the production environment, the project team builds a database optimized for the new system. The conversion process starts early in the project to allow time for purification and to allow a fully converted database to be used during end-to-end testing. As the cutover date approaches, the mock conversion activity includes optimizing the time it takes to convert the whole database, so that conversion is completed in the time allotted during cutover. At cutover, the production database and feeder systems are addressed according to a cutover checklist so that conversion can be conducted without conflict. The high-level activities of the Conversion Phase are outlined in the following text.

5.1 Inventory Data Resources – Existing data sources are inventoried for each rollout. The inventory of data sources is used to define the scope of agency data that is available to the conversion process. Each data source is reviewed for integrity and quality.

5.2 Conversion Approach – The conversion approach work product defines how the business data will be converted and includes details on items such as:

- Manual versus automated processes
- Customer information
- Approach to historical data
- Number of years of financial data
- Financial detail versus summaries
- Approach to work in progress
- Impact on new system processes and organizations

- Interim conversion manual or automated processes

The team creates a conversion schedule for timing of key activities. In addition, the team creates a conversion task list that provides an inventory and schedule for completing the conversion tasks.

5.3 Data Purification – Prior to the execution of the conversion, the team inspects the data from each legacy source to determine if there are inconsistencies in the data. These inconsistencies are resolved by developing and executing strategies to purify the data prior to (the preferred option), during, or after conversion.

5.4 Conversion Extracts – Conversion extract processes are developed and led by agency IT staff to access conversion data sources and create standard extract files. The conversion-extract process also provides control reports that detail the extraction process and are used to confirm the load processes.

5.5 Conversion Loads – Conversion loads include functionality to:

- Validate the extract files
- Reformat and load the extract files into the new data structures
- Produce conversion load control reports detailing the validation and load process

5.6 Sample Mock Conversions – The conversion team practices extracting and converting data multiple times through mock conversions. With each mock conversion, more data and more functions are added to the process until the full complement of data is extracted, purified, and formatted. The team makes available sample sets of converted data from early mock conversion for users to perform verification and comparison back to the legacy sources.

5.7 Full Mock Conversions – One or more complete mock conversions are performed to provide the basis for the timing and user verification of the converted data. Verification is supported by a reconciliation document that describes how converted data is reconciled to its legacy source.

a. What challenges and approaches do you recommend for data conversion and cleansing?

In our experience, the following are our recommended approaches and best practices for data conversion and cleansing:

- **Leverage Agency Staff Expertise** – The design of data conversion requires a detailed knowledge of the legacy data within each legacy system. Only an agency's users and IT staff possess this knowledge. Agency IT staff that have experience and expertise with the legacy systems are therefore the best resources for extracting, transforming, and purifying legacy data.
- **Use Experienced Resources** – Business specialists with experience in the field should be available to consult on legacy data extract, transformation, and purification processes.
- **Use a Repeatable Process** – Using the system to load converted data through the same processes that add and maintain the data on an ongoing basis helps to ensure that appropriate business rules are enforced on the incoming data.

- **Perform Data Verification and Converted Data Testing** – Subject matter experts should be available to perform data verification and data testing on the converted data. In addition, converted data should be used, wherever possible, for the creation of training data and during user testing.
- **Begin Purification as Early as Possible** – When it is not possible to address an issue before conversion, impact analysis must be performed, risks associated with the issue must be identified, and steps must be taken to mitigate the effects of data issues following conversion.

b. Describe how you ensure the converted data works in the target system.

Converted data testing and reconciliation, are a critical part of the conversion process. Converted data testing ensures that relevant data was correctly extracted from the legacy system and converted into FastVS. All business functions need to be exercised on converted data. The major steps of reconciliation include:

- Reconciliation of baseline statistics for the legacy application data and the control reports generated during the extraction process.
- Reconciliation of the extracted data with the data processed into the conversion staging tables.
- Reconciliation of the post-conversion data in FastVS with the baseline statistics from the legacy application, the extraction control reports, and the conversion staging tables.
- User verification through side-by-side comparison of data in the legacy system and FastVS.
- Use of converted data in final business/system testing.

Reconciliation is performed at the customer and transaction levels. Agency staff confirm that the conversion process can be correctly reconciled.

Reconciliation is performed on all full mock conversions, as well as selected mini mock conversions, and all discrepancies are addressed before the final conversion (production run) is performed. In the event that there are discrepancies in the production run, they are addressed at that time.

The recommended process for reviewing reconciliation reports:

- Legacy and extraction reports are compared by agency staff to validate the extractions.
- Files are bulk loaded and agency staff compare the load report to the extraction report to ensure all extracted data has been staged correctly for conversion.
- The conversion process is run and FAST compares conversion report data to the load and extraction reports to ensure data is loaded correctly.
- Extraction, load, and conversion reports are combined into a reconciliation report.
- The entire conversion team verifies the final conversion reconciliation report.

c. Describe how you handle the migration of non-relational data such as documents.

FAST coverts non-relational data such as documents and images from legacy systems to FastVS provided that the image index data is available. The strategy regarding how many images to convert and whether older images can be converted post production is dependant on the agency's need and/or willingness to retire legacy storage systems.

26. Describe how your framework supports customization.
    a. Does it support No-Code or business user customization?
    b. Can end users perform customizations or is it offered via professional services?

Please see our below response to items a and b.

Agency developers have complete access to FastVS business rules—the parameters that allow an agency to tailor the software to meet existing, new, and evolving business requirements. Our experience on multiple projects has shown that approximately 80% to 90% of agencies' administration functions can be implemented in our software through configuration. Our clients are therefore able to implement the vast majority of their business requirements in FastVS with no need for development of custom code. Agency personnel at many FAST project sites are involved in configuring our software to accommodate legislative and new-year fee and procedural changes, which can be implemented in a fraction of the time required under our clients' legacy systems.

While maximum flexibility through configuration is a primary design goal of the software, not every aspect of FastVS is configurable. Some truly unique interfaces, forms, correspondence, or other elements may require programming of custom components to support specialized functions. These site components are programmed by FAST developers and can be maintained, enhanced, or augmented by the agency.

27. Describe your post go-live support capability.

FAST offers multiple levels of maintenance and support for the years following the implementation period. Maintenance does not apply to site-specific modules, configurations, network, databases, training or items that are covered under Support Services. Maintenance includes the following elements:

Level 1 – Annual product maintenance. This level does not include full-time on-site FAST resources. This level includes items such as:

a. Access to service packs
b. Access to new versions of FastVS
c. Access to new and revised documentation
d. Phone support
e. Defect repair - we fix FastVS bugs at no cost

Most of our clients have found that some degree of assistance and support from FAST experts has proven beneficial. Therefore, we offer two additional levels of support.

Level 2 Support – In addition to what is included in Level 1, this level provides on-site FAST personnel to ensure that all system defects are resolved. This provides a continuing warranty of not just the licensed

FastVS software, but the entire system including site code, extensions, and configurations (equivalent to Warranty Period coverage).

Also, please note that these services do not include making modifications or enhancements to the system (such as implementing new case types/flows), nor do they include implementing legislative changes. The agency can supplement these services with additional on-site support as needed on a time-and-materials basis.

Level 3 Support – In addition to the activities that are included in Levels 1 and 2, this level provides on-site FAST personnel to ensure that service packs and new versions of FastVS are installed. This level ensures that the agency will always run the latest version of our products. This is highly unusual in the industry. While FAST provides this level of support to most our clients, we know of no competitor in this market space that has been consistently accomplishing this (that is, implementing new major upgrades of their software at a pre-determined fixed price).

The agency can supplement these services with additional on-site resources to implement modifications or enhancements to the system (such as implementing new case types/flows), or to implement legislative changes.

For budgeting purposes, we recommend that the agency plan on some level of ongoing maintenance and support so that funds are available if needed. We strongly encourage agencies to view their new system as a significant undertaking that warrants continued investment to ensure the solution keeps up with the business and technology landscape. Ten years after a project is complete, we expect that the agency would prefer a state-of-the-art system that runs on current technology, rather than a system that is ten years old.

Time and Materials Support

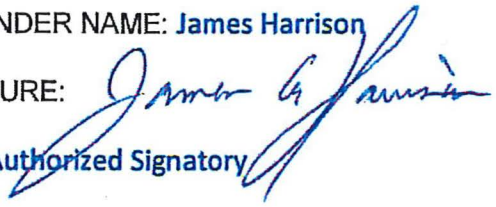
Many of our clients supplement Level 2 or Level 3 support services with additional on-site resources on a time-and-materials basis to assist with tasks such as:

- Prioritization and management of solution requests
- On-call production support
- Coordination with the FAST Development Center
- Configuration assistance
- Application development
- Best practices recommendations
- Implementation of legislative/business changes to existing programs
- Performance tuning
- Database maintenance, analysis, and review
- Supplemental user, developer, or operator training
- Other consulting and services requested by the agency

ACKNOWLEDGEMENT OF ADDENDUM 1

This addendum shall become part of the RFI and must be returned with, or acknowledged in, the Response.

RESPONDER NAME: James Harrison

SIGNATURE: 

TITLE: Authorized Signatory

DATE: May 24, 2018