Independent Expert Review of MNLARS

Independent Expert Review Team

Rick King, Theresa Wise, Mick Atton, Amy Albus

May 1, 2019

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Senate Transportation Finance and Policy
Committee

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   Minnesota IT Services

On February 6, 2019, by Executive Order 19-02, Governor Walz established the Blue Ribbon Council on Information Technology (BRC), stating "Minnesotans expect reliable, secure, and accurate information technology services when they interact with the state. That is why the Blue Ribbon Council on Information Technology was created to ensure the people of Minnesota have access to high-quality, dependable services". He appointed Rick King, Executive Vice President of Thomson Reuters as chair. Additional members were named in March 2019.

On March 5, 2019, the Governor signed HF 861 into law, and as a result the legislature appropriated deficiency funding for MNLARS and called for an independent review of MNLARS to be conducted by the chair of the Governor's Blue Ribbon Council and others to be selected by the chair with a May 1, 2019 due date.

The Blue Ribbon Council chairman, Rick King was asked to *"produce a detailed report of the chair's findings, recommendations, and opinions, including recommendations on whether to outsource all or parts of MNLARS functionality based on information provided…"*.

We hereby submit our report and recommendations. We look forward to further discussion.

We received cooperation from all agencies, stakeholder, vendors, as well as other states.

Sincerely,

Rick King

Mick Atton

Theresa Wise

Amy Albus

Independent Expert Review Team

On February 6, 2019, by Executive Order 19-02, Governor Walz established a Blue Ribbon Council (BRC) on Information Technology, intended to "provide advice on how to update and maintain the State's IT systems to ensure that Minnesota residents and businesses who interact with the State receive the best possible service." He appointed Rick King chair. Additional members were named in March 2019.

On March 5, 2019, the Governor signed a bill in which the legislature appropriated deficiency funding for MNLARS and called for an independent review of MNLARS to be conducted by the chair of the Governor's Blue Ribbon Council.

The Blue Ribbon Council chairman, Rick King, enlisted the assistance of Theresa Wise and Mick Atton to complete the Independent Expert Review of MNLARS pursuant to HF 861. They were supported by Amy Albus. Mr. King has worked in the IT industry for over 30, serving as CIO, CTO, COO and other roles, including his current role as Executive Vice President Operations at Thomson Reuters. Dr. Wise has a long and distinguished career including many years as an airline industry CIO. Mr. Atton has worked for over 30 years in the software and information industry as a programmer and most recently chief architect. Ms. Albus is an attorney and most recently a change and program manager at Thomson Reuters.

Table of Contents

Independent Expert Review Directive

This report is offered in response to a 2019 law requiring an Independent Expert Review of the Minnesota Licensing and Registration System (MNLARS).[1]

The language of the law states that the chair must
1) render an independent expert's opinion on:
(i) whether DPS and MN.IT have the necessary technology, software development processes, and staffing plans to correct all current critical, high, and medium defects and gaps, as identified by external end users, that do not require major architectural changes to MNLARS by the end of calendar year 2019;
(ii) whether DPS and MN.IT have the necessary technology, software development processes, and staffing plans to fulfill all required back end work, including decommissioning of the legacy system by the end of fiscal year 2021, given full development, operating, and maintenance funding as proposed in the governor's February 2019 budget;
(iii) whether DPS and MN.IT are poised to successfully deliver all project deliverables on time and on budget by the end of fiscal year 2021; and
(iv) whether DPS and MN.IT would, or would not, be more apt to succeed in meeting project deliverables and timeframes, within the funding as proposed in the governor's February 2019 budget, by adopting a commercial off-the-shelf software solution or an outsourced service to replace all or part of the MNLARS functionality;
(2) produce a detailed report of the chair's findings, recommendations, and opinions, including recommendations on whether to outsource all or parts of MNLARS functionality based on information provided pursuant to paragraph (a) and received from private sector entities.

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[1] *Laws of Minnesota* 2019, Chapter 1.

Executive Summary

METHODOLOGY

The independent review of the MN Licensing and Registration System (MNLARS) began on March 5th, 2019. To accomplish the legislative directive, the Independent Expert Review Team (the Review Team) met with numerous MNLARS project team members (agency staff and contractors) who worked on MNLARS, other Minnesota Information Technology (MN.IT) and Department of Public Safety (DPS) staff members, MNLARS end-users, including auto dealers, auto salvage owners and twelve Deputy Registrars (public and private, metro and outstate, small and large), and lobbyists for Minnesota Auto Dealers Association, Insurance Federation of Minnesota and the Auto Auctioneering Association. Meetings were held at the Centennial Building, in the Town Square Building, on-site at two Deputy Registrar offices, offsite at Thomson Reuters' headquarters and via conference calls.

The Review Team reviewed a wide variety of documentation including OLA reports, MNLARS project plans and documentation, budgets, daily reports and transaction records. The Review Team observed MNLARS operations in person and attended a MNLARS Executive Steering Committee meeting. In addition, the Review Team met with a packaged software solution provider to generally understand the maturity of their packaged software solutions for vehicle services. The Review Team also met via conference call with four states that have implemented a packaged software solution. All parties were open, transparent and helpful, and no issues were encountered while gathering the material needed to make this report.

REVIEW OVERVIEW

With HF 861, the legislature directed a review of the current "**MNLARS Build**" option and asked for assurance that it will, if properly funded, reach its goal of a fully functioning vehicle registration system by June 2021, including the retirement of all legacy systems. It also asked the Review Team to consider whether a "**Packaged Software Solution Buy**" option, where MNLARS development stops and the state contracts with a third-party for packaged vehicle services software would be more apt to succeed.

Our review of the two options is imperfect, primarily because detailed end-to-end vehicle system specifications do not exist. For that reason, estimates for and conclusions about both options are based on high-level descriptions of desired features. As with all large technology projects, additional costs often arise as more detailed requirements are written and may yield unpredictable results in terms of program timelines and costs. The Review Team evaluated both options to the level of detail currently available.

FINAL RECOMMENDATION

**The Review Team recommends replacing MNLARS with a
packaged software solution.**

While this recommendation drives incremental cost in the short-term and causes disruption with another cutover, it is the lowest risk path to a solution that is expected to more fully meet the long-term needs of all stakeholders, in part because of the opportunity to leverage features, functionality and best practices from other states that use the same software. The efforts of the MNLARS project team so far greatly reduces the risk often associated with a packaged software solution. Three of the greatest challenges have already been handled: 1) The requirements and user stories already written have helped to identify conflicting and inefficient business processes; 2) the MNLARS Team has already completed data transfer from the legacy system and some data clean-up; and 3) Deputy Registrars have already shifted their workflow to accommodate more data entry.

The following steps are key to maximizing the benefits and minimizing the risks associated with this recommendation:

- **Rapid procurement** of a packaged software solution (at a further negotiated price) which requires minimal custom development from a vendor that offers all aspects of development, QA, stakeholder involvement, training, implementation and on-going upgrades and support,
- **MNLARS development freeze** as of release 1.16 (June 2019) and maintenance of a nominal staff to address bugs during the implementation of the replacement product,
- **DPS ownership** of the project as the subject matter expert that drives to enable expected results of the selected vendor, provides back-office functions and supports Stakeholders,
- **MN.IT partnership** with DPS on technical aspects such as data integration and the setup of infrastructure and peripheral devices,
- **DPS and MN.IT collaboration** on staffing functions such as user acceptance testing, a critical acceptance function working with the vendor.

This recommendation was formed based on the independent experience and expertise of the Review Team after considering a continuation of MNLARS development (Build) as compared to procurement of a packaged software solution (Buy). It addresses the fact that MNLARS will be unlikely to fully satisfy the needs of stakeholders and reflects the positive experience of all four states utilizing the packaged software solution.

The Review Team carefully considered dissenting opinions of the Stakeholder, DPS and MN.IT employees who faced significant and disruptive changes during the transition from the legacy system to MNLARS, and who prefer not to face another change. The Review Team also considered the risk associated with freezing the development of MNLARS, permitting only mandatory changes and bug-fixes, while the packaged software solution is prepared.

OVERVIEW: MNLARS BUILD

The **MNLARS Build** option is a continuation of the current program, which uses contractors to execute architecture, programming, testing and release tasks. The review revealed that since the premature and failed first release of MNLARS, the project team has established a productive operating rhythm. By consolidating the number of vendors, introducing coding and testing standards and reconnecting with end-users, they have effectively stabilized the system, making it operational for the majority of typical transactions completed daily and achieving success on several project metrics, including minimizing system downtime.

The MNLARS architecture and technical plan are sound, but in the early development of the project, the plan was not followed and a rush to release yielded questionable development practices. The results are still being felt and clean-up continues. The MNLARS team has a reasonable roadmap to complete the remaining project deliverables as currently identified, but the list of deliverables holds many unknowns. Completing the roadmap will require a staff surge that introduces many inexperienced staff to the project in a short period of time. In addition, the review revealed concerns about the MNLARS team's ability to satisfy the needs of the stakeholders with a continued MNLARS build, both now and in the future.

Additional analysis is provided in the MNLARS Build section.

OVERVIEW: PACKAGED SOFTWARE SOLUTION BUY

For the Packaged Software Solution option, the Review Team studied the April 2018 Request for Information (RFI) and submissions from the three vendors who replied, including notes from their respective March 2019 resubmissions. The Review Team selected one of those vendors to use for comparison purposes and to answer the legislature's question. By further analyzing the solution offered by this one firm, the Review Team is not selecting one among the three as winner but rather using their numbers and timeline as a placeholder for the Buy option.

The vendor considered for comparison purposes provides a mostly turnkey software product that is licensed annually. They currently service 12 states, with a "core" system that is the same for every state and then customization to address the many state to state variances in motor vehicle laws. The vendor cost includes license fees for use of the system, configuration costs, implementation costs, training costs, and support costs.

One of the largest benefits the Review Team noted was the deep expertise they have developed in the last five years with the base of customers they have established. The level of their satisfaction is a key element of the Review team's recommendation. Minnesota would benefit from this expertise and also gain the potential to leverage enhancements that come from other states' requirements and processes, possibly even reducing R&D and innovation investment.

The Review Team heard from some states that use the same packaged software solution provider for both the Driver and the Vehicle sides thus gaining advantages from the use of one system and one database.

On the risk side, the Review team noted that Minnesota would be just one state in a pool of states using the packaged software solution and thus would be unable to unilaterally prescribe feature changes and time lines. The state would also be subject to the vendor's pricing increases. The Review Team believes that market pressures will create a competitive environment providing a counter to extreme price increases. The Review Team finds the risk of satisfactory completion to be lower on the packaged software solution side than on the Build side.

Further detail is available in the Packaged Software Solution Buy below.

COMPILED FINDINGS

The findings below surfaced as part of the review and were considered by the Review Team in the recommendation to procure a third-party software solution.

Finding 1: **The MNLARS system is operating without outages and performs basic operations; the MNLARS architecture and technical plan are foundationally sound and the MNLARS team is demonstrating best practices for Software Development.**

Finding 2: **Several of the issues reported by stakeholders stem not from MNLARS itself, but from either antiquated or ill-defined business rules and processes or from incorrect data in the legacy system.**

Finding 3: **The current staffing and process for stakeholder engagement and support is insufficient to ensure that completion of MNLARS will be successful.**

Finding 4: **Third-party vendors have deeper and broader domain knowledge of vehicle system software development.**

Finding 5: **The risks associated with a packaged software solution are more manageable than those associated with a continued MNLARS Build.**

COMPILED RECOMMENDATIONS

Vehicle System Recommendations

Recommendation 1: **The State should review the current state of tax and fee collection, including revisiting the current laws (e.g. using MSRP to calculate tax obligations) and ensuring proper calculation for all citizens.**

Recommendation 2: **The MN.IT CISO office should perform an in-depth application and security audit and a thorough review of the procedures for privileged account handling, password management (aging, reset), security monitoring (audit), and anomalous behavior detection.**

Recommendation 3:   Deputy Registrar fees should be revisited, considering the process change imposed.

Recommendation 4:   The alignment between DPS and MN.IT must be strengthened, with DPS as the Program Owner, making the final call on functionality priorities and decisions, and MN.IT as the Technical Lead, making final decisions regarding the implementation of technology products and services, MN.IT technical staff and technical vendor staff.

Recommendation 5:   DPS should prioritize the onboarding of qualified business analysts who can ensure that relevant stakeholder needs are elicited and provide better training and support for end users, including offering a training environment, increasing staff to handle the backlog and improve customer service, and proactively monitoring issues that cause customer impact, like incomplete transactions or rejected calls.

Recommendation 6:   The project team should develop and distribute a single scorecard to all stakeholders - one that focuses on key areas of pain and risk, combining statistics (current performance, trends, targets) balanced with stakeholder experience.

Recommendation 7:   The agency should carefully review business rules and consider process changes in workflow rather than customizing software.

Recommendation 8:   For this project, the state should use an accelerated method of purchasing.

Recommendation 9:   The state should create procurement and finance teams for the Packaged Software Solution Buy, distinct from the ones working on the MNLARS Build work.

Recommendation 10:   DPS should consider including self-service as a requirement for the vehicle system.

Additional Recommendations

Recommendation 11:   Where appropriate, MN.IT should seek to leverage packaged software solutions.

Recommendation 12:   Evaluate and simplify business processes, rules and regulations before replacing a large, comprehensive application.

Recommendation 13:   In cases where third party systems need to connect to a State IT system, the Review Team recommends building an open API rather than building an API for a single third-party provider.

Recommendation 14:   MN.IT should build out the state's enterprise IT architecture and evaluate all future solutions in that context.

Recommendation 15:   The legislature should not be overly prescriptive with funding restrictions but rather allow agency leaders to use allocated funds within the program to the areas they think most appropriate (features, support, backlog).

Recommendation 16:   Oversight should be provided for large IT projects (including by the agency, by the OLA or by external auditors).

MNLARS Build

This part of the review focused on the current state of MNLARS functionality and usability as reported by end-users as well as the MNLARS project plan, including architecture, development processes, staffing, and stakeholder engagement. The Review Team sought to understand stakeholder needs:

- What do end-users identify as critical, high, and medium defects or gaps in MNLARS?
- At what point in the project roadmap are the identified defects and gaps addressed?

The Review Team sought information about the current MNLARS team's ability to execute on the project plan:

- Does the MNLARS team have the necessary technology, software development processes and staffing plans in place to successfully complete the project roadmap?
- Are stakeholders appropriately engaged in and kept informed throughout the development process?
- What might MNLARS offer that would not be available from a packaged software solution?

MNLARS OVERVIEW AND PROJECT HISTORY

The Office of the Legislative Auditor has provided a thorough explanation of the history of MNLARS in each of their quarterly reports. This is the MNLARS History section from the April 2019 Quarterly OLA report on MNLARS Performance:

> *DPS is responsible for MNLARS. DPS relies on MNLARS to process, transmit, and store driver and vehicle services transactions. In Fiscal Year 2018, MNLARS helped the agency collect more than $1.6 billion in driver- and vehicle-related taxes and fees. MNIT provides technical support for the system.*
>
> *Beyond DPS, many entities and individuals rely on MNLARS. Minnesota has 174 Deputy Registrar offices and 127 driver's license agents that use MNLARS to provide motor vehicle registration and licensing services. Auto dealers also interact with MNLARS to list new vehicles held for resale and to transfer ownership of vehicles. Finally, law enforcement officials use the system to obtain information about drivers and vehicles in Minnesota.*
>
> *MNLARS began as a multi-year project in 2008 to replace the state's aging mainframe license and registration systems. In 2009, DPS hired a contractor, Mathtech, Inc., to gather business and technical requirements. In 2012, DPS contracted with Hewlett-Packard to develop the new system. In 2014, due to vendor performance concerns, DPS ended its contract with Hewlett-Packard and brought the development in-house, partnering with MNIT and various subcontractors to finish the system.*

In July 2017, the agencies launched the motor vehicle components of MNLARS. With this launch, DPS and MNIT encountered a variety of highly publicized business and technical problems, leading to widespread frustration. Recognizing that it was no longer practical to continue internal development of the driver's license components of MNLARS, in November 2017, DPS and MNIT contracted with Fast Enterprises, LLC, to provide software and services to replace the state's outdated driver's license system. DPS, MNIT, and their vendor implemented the new driver's license components of MNLARS on October 1, 2018.

In response to the MNLARS problems, the 2018 Legislature created a special oversight committee, called the MNLARS Steering Committee. The 2018 legislation requires DPS and MNIT to provide quarterly progress reports to the committee. The legislation also requires OLA to audit the information in those reports, along with other technical oversight duties.

In addition to the history above, the Review Team noted that at the time DPS ended its contract with Hewlett-Packard in 2014, there was reportedly no end-to-end vehicle system available in the market that had proven results in multiple states.

CURRENT STATE OF MNLARS

Stakeholders seem to agree that MNLARS was released prematurely in July 2017, despite strong objections from internal DPS and external end-users. The impact of the initial MNLARS release was dramatic because:

1) data entry work that previously had been handled by DPS staff shifted to Deputy Registrars;
2) basic functionality and data was unreliable or not working at all; and
3) insufficient support was provided to prepare internal and external end-users for the resulting issues.

All the above factors increased the workloads of the Deputy Registrars, overwhelmed DPS staff (internal MNLARS end-users) and frustrated citizens with long wait times and transaction errors.

Since initial rollout, MNLARS has received 10 deployments, ranging from a rapid series of hotfixes immediately following the flawed July 2017 release through to more measured, generally monthly releases to service the master list of missing features and defects. These 10 deployments have implemented over 340 features and fixes. In addition, the data team conducts twice-weekly data cleansing, which confirms the on-going need for development.

The MNLARS team has a solid architectural and technical plan; and has begun using robust tools and methodology for development and testing. System downtime that was common at initial release has been effectively eliminated. The team's efforts to engage stakeholders and attain stakeholder satisfaction are improving but remain inadequate, raising questions about their ability to successfully complete the project in the eyes of the stakeholder.

Finding 1:   The MNLARS system is operating without outages and performs basic operations; the MNLARS architecture and technical plan are foundationally sound and the MNLARS team is demonstrating best practices for Software Development.

MNLARS Features and Functionality

The MNLARS Team estimates that MNLARS is 77% complete, based on the remaining number of development epics, which are high-level descriptions of effort. The Review Team heard a range of opinions on state of completion from Deputy Registrars, who report their assessment of MNLARS as anywhere from 50% to 95% done. DPS staff place the completion rate between <50% and 90%, with comments that while much of the functionality for Deputy Registrars is in place to complete transactions, security auditing, reliable fee accrual and editing functionality is missing. The Review Team believes that MNLARS is two-thirds complete.

The legislature is seeking the best solution for completing the development of a license and registration system. Stakeholder satisfaction is a critical measure of success (or completion) for any project and factors highly into defining the 'best solution.' In this case, there are several different stakeholders to consider. Deputy Registrars make up one important stakeholder group, especially given their close interaction with citizens. The Review Team sought out several different stakeholder groups and looked not just at the features and functionality required by Deputy Registrars, but also at the needs of other stakeholders, including the citizens, the state, DPS staff, law enforcement, auto dealers and others.

The Appendix 2 Stakeholder Review section provides more detail about the reported experience and satisfaction of some of those stakeholder groups. There was unanimous agreement that there is work yet to be done in MNLARS. Most agreed that basic functionality now exists to complete the most common transactions, though a small subset of stakeholders strongly suggest that usability is poor, even for those basic transactions. The most common feedback the Review Team received from both internal and external stakeholders included:
- insufficient editing rights,
- inadequate reports (impacting inventory management, end-of-business close, and auditing),
- lack of pre-populating screens with available information,
- poor user-interface design (especially the color scheme and font size),
- reliance on remote support to complete certain tasks, and
- lengthy delays when seeking support.

Approximately half of the stakeholders interviewed by the Review Team reported that despite early challenges and existing frustrations with select transactions, they would rather keep (and enhance) the existing system than start over with a new system, most citing change fatigue as their reason for not wanting a packaged software solution.

In addition to assessing general stakeholder satisfaction, the Review Team noted several ways of evaluating the success of MNLARS, including data integrity, speed of data access for law enforcement, speed of processing for citizens, and standardized processes for collecting taxes and fees. None of the reported measures were independently verified.

Moving the data entry step closer to the customer interaction allows Deputy Registrars and citizens the ability to verify system data real-time, which increases the likelihood that records are correct. The MNLARS release appears to have provided visibility to data errors from the legacy system, but MNLARS did not have edit functionality for Deputy Registrars or for DPS staff to correct those errors, and the MN.IT Data Fix team was not staffed to handle all the necessary fixes, leading to a bottleneck of transactions, incomplete because of the inability to make simple changes.

The April 2019 OLA Audit reported MNLARS fee calculations to be correct on over 99% of transactions. Before MNLARS, business rules for fee calculations existed, but were not necessarily followed in the same way in all Deputy Registrar offices. With the introduction of MNLARS, the calculations were standardized.

In some cases, those calculations are different from the calculation in the Mainframe however, which has caused some confusion for citizens and frustration for Deputy Registrars. The very fact of a difference in calculations leads to a lack of confidence in the system, even if the source was not the system.

MNLARS Architecture and Technical Plan

Based on artifacts provided to the Review Team, the MNLARS foundational software architecture, database design and technology selection followed reasonable patterns for scalable, web-centric applications. Indeed, the flexibility of the initial database design should enable the future evolution of the vehicle system. That said, the development scramble to complete the initial July 2017 MNLARS release severely compromised much of the overall design. The resulting system experienced significant lapses in accepted software engineering best practices with the ensuing software code base containing a jumble of messaging techniques, and performance degradations.

The MNLARS Roadmap addresses the above lapses and the development team anticipates the progressive retrofitting of selected elements from the initial technical goals as backlogged features are implemented. Whether the final MNLARS system fully honors the project's initial design goals remains an open question. This is more than a theoretical distinction. Systems with deficient technology foundations incur elevated support costs over time. It is also unclear that the MNLARS team will be able to procure contractors with the subject matter expertise necessary to drive the desired results.

Vehicle Tax Collection and fees

It is incumbent on the state to ensure that it is collecting no more and no less tax than is directed by law. The development of a new system presented an opportunity to review the current laws and business rules to ensure consistent and accurate application to all citizens, but MNLARS stakeholders expressed confusion and reported concern about the accuracy of rate calculations, with some noting that using the Manufacturer's Suggested Retail Price (MSRP) value has been problematic (though this is not unique to MNLARS), and others noting that they occasionally see different tax calculations in MNLARS than are displayed on a customer's pre-bill statement (which still originates from the legacy mainframe system). Both situations arouse suspicion, which inhibits acceptance even if MNLARS is calculating correctly.

Finding 2: **Several of the issues reported by stakeholders stem not from MNLARS itself, but from either antiquated or ill-defined business rules and processes or from incorrect data in the legacy system.**

The current model also makes it difficult to ensure consistent application of taxes and fees throughout the state. Deputy Registrar's with more experience can often spot inaccurate calculations and know how to correct them. An inexperienced clerk however, may miss the inaccuracy (one that resulted from an overstated or understated vehicle valuation, for example), resulting in an overpayment or underpayment of taxes.

It is problematic that there is not a consistent source of information for the value of vehicle (MSRP). The state either needs to identify and leverage a reliable database of this data, to ensure consistency, or should identify another, more consistent method of calculating a tax obligation, e.g. using weight of the vehicle.

Recommendation 1: **The State should review the current state of tax and fee collection, including revisiting the current laws (e.g. using MSRP to calculate tax obligations) and ensuring proper calculation for all citizens.**

Data Integrity

The migration of data from the legacy mainframe to MNLARS has been a massive undertaking. Inconsistent business rules and an outdated process left numerous irregularities in the data on the mainframe. In preparation for the migration to MNLARS, the data team identified many of these irregularities and shared them with business owners for correction in the old system, prior to the migration. Even after a thorough review and a large quantity of corrections, the MNLARS release quickly revealed additional problematic data.

Deputy Registrars still (two years after release) encounter data that appears to have been logged incorrectly in the old system, and this has generated a great deal of angst, because Deputy Registrars are left having to choose to ignore the error (leaving bad data in the system) or choosing to correct the data, which can make even the simplest transactions difficult or impossible to complete on-site. Because of the limited edit functionality in MNLARS, Deputy Registrars must submit these errors to the data fix team for a programmatic correction. In our interviews, stakeholders across the board agreed that this submission process was burdensome. It has contributed to longer wait-times for citizens, increased workload for Deputy Registrars and for DPS Liaisons, and also created extra work for the data fix team.

The Data Fix team is running regular queries to identify irregularities in newly submitted data in addition to correcting errors migrated from the legacy system. Examples given to the Review team include improper vehicle classifications and searches not returning all vehicles under a single owner. This minimizes the introduction or maintenance of bad data. Several stakeholders suggested that DPS Liaisons must be given edit functionality to more quickly address these issues. This functionality was added mid-2018, but Liaisons often defer these changes to the data fix team to process them more efficiently in bulk.

MNLARS Security

MN.IT has a broad set of security and privacy policies that are generally consistent with current industry practice. While the MNLARS development team has incorporated many of the suggested standards in their procedures, the team needs to adopt a more active embrace of security as a foundational development practice. Some normally expected "hygiene" functions such as security monitoring have not yet been implemented.

> **Recommendation 2:** **The MN.IT CISO office should perform an in-depth application and security audit and a thorough review of the procedures for privileged account handling, password management (aging, reset), security monitoring (audit), and anomalous behavior detection.**

PLAN FOR ONGOING MNLARS DEVELOPMENT

MN.IT's current development plan calls for four quarterly releases through FY2020 largely addressing the master list, stakeholder operational improvements (removing workarounds) and various stability fixes. Work planned in FY2021 includes an increased development cadence to six bimonthly releases, which add DPS operational improvements, external configuration features and the progressive migration of the eight remaining legacy systems.

MNLARS Software Development Process

Based on the most recent releases, the team has reached a productive level of practice in the Agile methodology that is finally starting to pay dividends in terms of project outputs. Furthermore, the tools used by the team have reached a state of maturity as the team continues to identify and implement Agile best practices. They have improved their development and QA processes and are using monitoring tools that allow them to make better decisions, faster. Testing automation is proving critical to managing the deliverables of the project and is reaching high levels of coverage (exceeding 90%) for new development. The Review Team has concerns about whether this cadence will continue with the introduction of a sizable number of new contractors.

Stakeholder Engagement

Stakeholder engagement is a critical component to any software development project. Frequent and full collaboration between end-users and developers increases the likelihood that the end-product will be successful. In the initial stages of MNLARS development, internal and external end-users were engaged to inform development and assist with testing. As the release date neared, however, stakeholders were marginalized, and decisions were made that ran counter to stakeholder recommendations. The resulting build and releases aggravated all involved, including Deputy Registrars whose workload and profits were impacted, their customers (individual citizens and businesses) who experienced long wait times and encountered errors, and DPS staff members who were left alone and largely unsupported to address the barrage of questions.

The current governance structure gives both internal and external end-users a forum--the Executive Steering Committee--in which to share requests and feedback. Stakeholders have given varied reviews on the usefulness of this forum, with some expressing concern that they are not heard by the development team. The review revealed that the forum was a mixed success with a good flow of information from the MNLARS product and development team but with limited discussion between stakeholders and the DPS staff present.

Appropriate stakeholder engagement and deference at the time of the MNLARS release could have prevented significant negative impact. In addition, a review of the current customer service call and email metrics includes a troubling ongoing trend of inadequate support. DPS reports that the limited servicing of public phone lines and limited capacity of the call center staff causes incoming calls to be rejected, triggering a busy signal for the caller. One-third of calls to the DPS Contact Center were rejected in this way from December 2018 to February 2019. That is a 33% improvement from the quarter prior, but is still wholly inadequate. All stakeholders are interested in creating a good experience and ensuring a good result for Minnesota citizens. DPS staffing must be increased to improve stakeholder engagement in the project and support areas.

> **Finding 3:**   **The current staffing and process for stakeholder engagement and support is insufficient to ensure that completion of MNLARS will be successful.**

Though all stakeholders have been impacted, Deputy Registrars report the greatest financial impact. Since the initial failed release, they have also played an important part in identifying and prioritizing gaps and defects and they have remained steadfast in their mission to provide support to Minnesota citizens.

> **Recommendation 3:**   **Deputy Registrar fees should be revisited, considering the process change imposed.**

MNLARS Staffing Plan

Despite the false start in 2017, the MNLARS project team appears to be reaching a rhythm that is effective and efficient, as evidenced by the most recent releases 1.14 and 1.15 and the 2018 quarterly reports. Reducing vendor engagement from 47 firms to 13 (and a plan to reduce to two) has significantly reduced variation and complexity that was making testing and QA difficult. It helped solidify the relationship between the team members and contributed to the stabilization of the system. But, until the approval of the emergency funding, the MNLARS team was understaffed in a few key areas. To compensate, team members were working extra hours and carried out tasks and activities outside of their usual roles to make the recent releases successful. With the provision of emergency funding in March 2019, the team is hiring a significant number of contractors to address the shortfall in a number of key roles, which will allow this team to deliver release 1.16.

The current MNLARS team includes members (mostly contractors) that have been with the project since it first began, before the contract with HP was signed. They have familiarity with the data stored and the anomalies within, with the applications used and the interconnection between them, with the stakeholders involved and their relative needs, and with the existing Minnesota motor vehicle laws and the process of generating new ones. However, most of the contractors had no previous experience

building a vehicle registration system. The hiring of new contractors will continue to drive the same issues related to a lack of familiarity with the targeted system and processes.

The composition of roles on the MNLARS team follows best practices for a large-scale software development project, although only 5 MNLARS team members are on staff with MN.IT or DPS. Several critical roles including those deciding the overall software architecture, technology platforms, development cadence (e.g. scrum masters) and development leads are currently filled by contractors from several different companies.

MNLARS Review Conclusion

The review revealed that MNLARS has sound architecture and a solid technical plan with a roadmap to complete the remaining project deliverables as currently identified. The Review Team noted the number of unknowns in the remaining project and the inherent risks. Hiring staff unskilled in the domain adds more risk. Approximately half of stakeholders interviewed by the Review Team, including Deputy Registrars and other end users, did not want to give up the progress that has been made and start again. They feel MNLARS is close to completion and like that it is tailored to the needs of Minnesota stakeholders. They believe that ongoing MNLARS development will be sufficient to meet their needs, but most talked about it being adequate, not being great.

The Review Team believes continued MNLARS development to be risky and does not recommend proceeding with the MNLARS build. Although it appears that additional critical steps of the MNLARS program could be completed by June 2021 with the funds currently proposed, both the Review Team and the MNLARS team are concerned about their ability to satisfy the needs of the stakeholders. There is still so much yet to discover, and the start of each new 'epic' opens the possibility of adding new stakeholder issues to the master list that have not yet been accounted for. Because the MNLARS team does not have any prior experience building a vehicle system, the Review Team expects that they will encounter surprises that have not been accounted for in their roadmap – and that as new features and functionality are released, stakeholders will continue to discover issues that will add to a never-ending list of unranked backlog items.

For many reasons already identified in prior OLA reports, the MNLARS team has been operating at a severe disadvantage. Still, they have made great strides, The MNLARS team is building a vehicle system for the first time. They have developed domain expertise on Minnesota vehicle services (laws, procedures, processes, and tools). They do not have the deep (or broad) domain expertise that comes from building vehicle services software for a broad range of customers. In a large software development project like this, the site-specific domain knowledge should live in the agency; the technology expertise with a third-party.

Ensuring Success

To maximize the chances for success on a project like MNLARS (with a build or with procurement of a packaged software solution):

1) It is important to **clearly delineate roles and responsibilities** for all engaged parties - MN.IT, DPS, staff augmentation contractors, and third-party vendors with packaged software solutions.

MN.IT must both establish and maintain the overall software architecture, technology standards and on-going program leadership, but it need not staff a high volume of experts in software development and quality assurance, for example. DPS owns the solution and must ensure all stakeholders are engaged and satisfied. They must collaborate with MN.IT on requirements elicitation and user acceptance testing and are responsible for training and change management efforts. For other functions like development and quality assurance, MN.IT and DPS should identify and leverage appropriate external expertise in each relevant domain.

Recommendation 4: **The alignment between DPS and MN.IT must be strengthened, with DPS as the Program Owner, making the final call on functionality priorities and decisions, and MN.IT as the Technical Lead, making final decisions regarding the implementation of technology products and services, MN.IT technical staff and technical vendor staff.**

2) Quarterly OLA reports have highlighted the deficits that resulted from inadequate **business analysis**, a critical role for both build and buy. Emergency funding is currently available for DPS to hire BAs, and hiring is underway. The MNLARS team has called out the risk of not getting qualified BAs for ongoing development. Developers cannot build what stakeholders want unless someone is able to elicit and then accurately detail their need.

Quarterly OLA reports have also highlighted delays that resulted from an insufficient volume of **DPS support staff**. This was reinforced by conversations with DPS staff, who indicated that they have been overwhelmed by the high volume of calls and emails, unable to complete usual activities like site visits and audits. It was further reinforced by external end-users who noted the long wait time for support (though this is improving) and complained that training new hires is cumbersome with the lack of a training environment, no dummy records to practice on and lengthy job aides that are not user-friendly.

One result of the inadequate staffing at DPS has led to a backlog in unattached documents and incomplete transactions. The queue of 'unattached documents' in MNLARS is exceedingly large, but does not reflect the true number of unattached documents (for a variety of reasons explained in the April 2019 OLA report), and it is not an appropriate focus for addressing the problem of delays. Instead, the focus should be on the Incomplete Documents queue, which (when filtered to account for mail and scanning delays) more accurately reflects the backlog, showing all transactions for which there is a mismatch between the number of documents submitted and the number of documents received.

Due to the extremely high volume of calls (including many that are rejected because of insufficient capacity) and a high volume of emails that began with the release of MNLARS and continued until the most recent release, DPS staff is currently resolving these incomplete transactions only when they receive an inquiry. The combination of system stabilization and staff augmentation (in their recent budget request) will enable them to address the queue that is causing delays for Minnesota citizens and extra work for Deputy Registrars who must follow-up on their behalf. An active effort to reduce this queue would reduce citizen frustration, reduce Deputy Registrar workload, and reduce the call and email volume handled by DVS staff.

Recommendation 5: **DPS should prioritize the onboarding of qualified business analysts who can ensure that relevant stakeholder needs are elicited and provide better training and support for end users, including offering a training environment, increasing staff to handle the backlog and improve customer service, and proactively monitoring issues that cause customer impact, like incomplete transactions or rejected calls.**

3) The Review Team received a 31-page report that aggregates a wide range of MNLARS metrics that are reportedly shared with MN.IT and DPS Executives, the Governor's Office, the Legislative Oversight Committee, the OLA auditors and others. The metrics encompass a range of factors including underlying system availability, speed of transactions, transaction backlog, turnaround time, abandoned calls and approximately one hundred other aspects of the program.

While the Review Team finds that a broad range of useful factors are tracked or trackable, there is not a measure (or set of measures) that document stakeholder experience or satisfaction. Additionally, the metrics are not compiled in an easy to consume format that would make it easy for stakeholders and agency leadership to evaluate all aspects of the program.

Recommendation 6: **The project team should develop and distribute a single scorecard to all stakeholders - one that focuses on key areas of pain and risk, combining statistics (current performance, trends, targets) balanced with stakeholder experience.**

Packaged Software Solution Buy

As directed by HF 861, the Review Team examined options to purchase existing software packages from vendors for vehicle titling and registration. This part of the independent review focused on the general RFP process and on the 2018 RFI process and the resulting submissions by third-party vendors offering packaged vehicle service software. The Review Team was unable to review all vendors in detail given the time constraints and is not offering a recommendation regarding which of the vendors is most appropriate within this document. The Review Team does however have an opinion after its examination. Instead, the Review Team selected one of the vendors that responded to the RFI to use only as a sample for comparison to MNLARS, one that sells packaged vehicle service software that is used in 12 states. Again, the goal is to compare and to recommend the best outcome for the state.

To help assess likelihood of success the Review Team looked to customers (other states) with a Deputy Registrar-like model like that of Minnesota. The Review Team examined the development and implementation process as well as stakeholder engagement plans:

- How does a third-party ensure that software provided accounts for all the unique motor vehicle law variations that exist in Minnesota?
- Would a third-party be willing and able to meet the expressed desires of the end-users?

The Review Team evaluated the cost, timing and benefits of procurement:

- What is the timeline for procurement of third-party packaged software? How can this time frame be improved?
- How much will a packaged software solution cost, in comparison to MNLARS?
- What could a third-party packaged software solution offer that might not be available from MNLARS?

REQUEST FOR INFORMATION

DPS issued a Request for Information (RFI) in April 2018 to obtain information from vendors regarding the feasibility of replacing MNLARS. Three vendors replied, indicating both their ability to meet the identified functions/features and the cost of doing so. The Review Team reviewed all three responses and selected one for deeper examination to allow for a more accurate comparison to the MNLARS build, not in any way indicating that vendor as the best or appropriate choice. After examining the experience of all three vendors, the Review Team noted that each has valuable domain knowledge in vehicle system software development for at least some of the desired features and functionality, arising from a broad variety of experience with development for multiple states.

Finding 4: **Third-party vendors have deeper and broader domain knowledge of vehicle system software development.**

That said, motor vehicle laws vary from state to state, and very few states follow a model like Minnesota's Deputy Registrar system, where the transaction starts with private, city or county employees but is finalized and approved by state employees. This adds complexity to the software development. The Review Team identified other states (Washington and New Mexico) with a model like Minnesota and contacted them to get their perspective. The Review Team met with one third-party vendor to gather more information about the development and implementation. MN.IT and DPS staff provided information about the RFI and RFP process, budgeting, and what MNLARS operation would look like during customization and implementation of a packaged software solution. The Review Team presents here how purchasing a packaged software solution might look and how much it would cost based on unnegotiated prices. The Review Team expects lower vendor costs after negotiation.

PACKAGED SOFTWARE SOLUTION REVIEW

The vendor considered for comparison purposes provides a mostly turnkey software product that is licensed annually. They currently service 12 states. The vendor cost includes license fees for use of the system, configuration costs, implementation costs, training costs, support costs, and other fees. They offer a "core" system that is the same for every state. State-to-state variances in motor vehicle laws are handled with both configuration parameters and custom code.

The Review Team spoke with four states (Washington, New Mexico, Utah and Colorado), two of whom DPS characterized as "most like Minnesota". These states were very satisfied with the solution from this vendor. At least one of the states had a history much like Minnesota's where they had a ten year long attempt to build their own solution before stepping back, restarting from the business requirements stage and ultimately selecting this vendor. None of these states wished they had built instead of bought and none of them expressed any regret with their vendor choice.

Indeed, the above four states commented positively and consistently on the advantages of selecting a packaged software solution. The initial development process ensured that all business processes are accounted for in either the core solution or with customization (configuration or custom code). While every state does require some custom code, the interview with the vendor revealed that they have grown to the point where they have very few surprises and there is very little they haven't seen with prior customers. They have enabled extensive configuration options that do not require custom code. (Washington related that they implemented a special plate in one 2-week development task). The Review Team recommends leveraging parameters and minimizing custom code where possible to minimize to implementation and operational risk.

> **Recommendation 7:**   **The agency should carefully review business rules and consider process changes in workflow rather than customizing software.**

With quarterly feature releases and monthly technology updates, customers avoid falling behind the technology curve. In addition, states report sharing their knowledge, best practices and experience within the package provider's user group forum.

PACKAGED SOFTWARE SOLUTION TIMELINE

With the Buy option, MNLARS would be frozen after release 1.16. Frozen means that no new functions or features would be developed, but break-fix and security patches would continue to occur until it was decommissioned after the Buy software goes live. This requires a reduced MNLARS staff to remain actively engaged in maintenance, while MN.IT and DPS fill all necessary roles to ensure success on the development and implementation of the packaged software solution.

Based on the conversations above, the Review team believes development and implementation of a Packaged Software Solution to replace MNLARS and legacy code would take approximately 24 months. This timeline would be extended by an RFP process that could add 9-12 months. Given the already-long duration of this project and the amount of money spent, the Review Team believes the state should find a way to reduce this to less than a month, to minimize the time during which the state must pay for both MNLARS and the packaged software solution.

> **Recommendation 8:** **For this project, the state should use an accelerated method of purchasing.**

Assuming purchasing can be reduced to one-month, the Review Team is confident the core processes of a packaged software product could be operational in 18 months. This would provide more functions and features than the MNLARS build over the same period. The remaining 6 months would be used to replace functions that exist today on the mainframe. The exact timeframe and cost estimate should be developed by teams independent from MNLARS to ensure there is no conflict.

> **Recommendation 9:** **The state should create procurement and finance teams for the Packaged Software Solution Buy, distinct from the ones working on the MNLARS Build work.**

Build and Buy Comparison

COST AND TIMELINE

The Review Team believes the timeline for the two options would be similar, assuming the selection process can be completed in one month. MNLARS completion is slated for June 2021. With an accelerated purchase of a packaged software solution, the core solution could launch by October 2020 and final replacement of all legacy systems by August 2021. Below is the anticipated timeline for a packaged software solution:
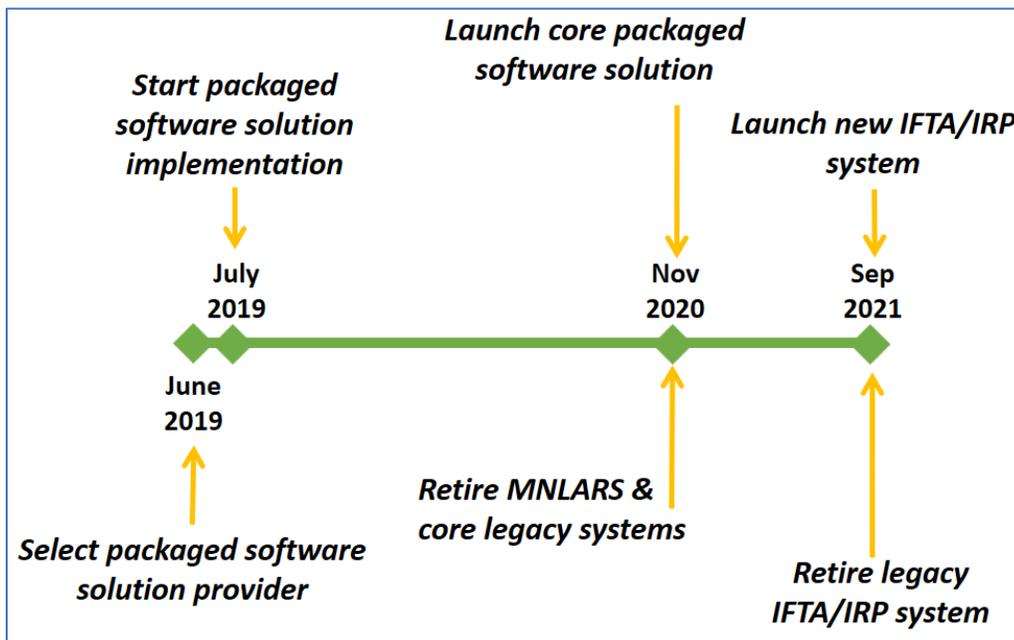
The tables below offer a cost comparison. The figures were supplied by MN.IT Finance, based on one vendor's response to the 2018 RFI and informed by the MNLARS team. The first table below shows the cost of implementing a packaged software solution compared to the cost to finish the MNLARS build. The next table displays a comparison of the ongoing maintenance costs for the two options over the subsequent two years after the final release. In both tables, when a range was presented by the vendor in the RFI response, the Review Team chose to use the lower cost. The Review Team believes that DPS and MN.IT should be able to negotiate a lower rate for the packaged software solution than was presented in the RFI, partly because so much of the analysis has already been done for the project and also because of the already existing engagement for the driver system.

Implementation | Development

Packaged Software Solution 26 month, 2-phase Implementation	**$60.5M**

Implementation	**$40.4 M**
vendor labor – impl.	$32 M
state labor – data migration	$3.6M
state labor – impl.	$4.8M

New Infrastructure	**$7.9 M**
vendor license	$4 M
new 3rd-party software	$1.3M
new hardware+cloud	$2.6M

Final MNLARS Build 2-year development	**$53.2M**

Development	**$35.3 M**
MN.IT labor	$24 M
state labor - data migration	$8 M
DVS labor (BAs & UAT)	$3.3M

Addt'l office space	**$.6M**

Ongoing MNLARS & Legacy Ops & Maint.

$0.72M per month
(Includes software, infrastructure, state labor, and allocation)

Target of 16 months	**$11.5M**		Target of 24 months	**$17.3M**
Additional 10 months of IFTA/IRP only	**$0.7M**			

Operations & Maintenance

Packaged Software Solution 2 years O&M	**$25.2M**

Maintenance	**$16.7M**
vendor labor	$7 M
state labor, vendor rqmt	$1.9M
state labor - data team	$1.8M
add'l state labor* for vendor support and o&m	$6 M

Infrastructure	**$6.5M**
Vendor license	$2 M
3rd-party software	$2 M
hardware+cloud	$2.5M

State allocations	**$2M**

MNLARS 2 years O&M	**$18.1M**

Maintenance	**$10M**
state labor - data team	$2 M
state labor – o&m	$8 M

Infrastructure	**$6.1M**
3rd-party software	$2.5M
hardware+cloud	$3.6M

State allocations	**$2M**

*The Review Team expects that the amount of additional state labor as supplied by the MNLARS team will decrease as MN.IT and DPS gain experience working with the packaged software solution provider and as the data quality improves over time.

BENEFITS AND RISK

The Review Team carefully considered the advantages of both options alongside of the risks and expected challenges of each. As noted above, the Review team concluded that the work already completed on MNLARS has reduced some of the risks commonly associated with a packaged software solution. Other risks can be addressed with training and support. The MNLARS disadvantages, on the other hand, are harder to dampen.

Finding 5: **The risks associated with a packaged software solution are more manageable than those associated with a continued MNLARS Build.**

MNLARS Build	
Advantages	**Disadvantages**
- Lower overall cost to complete the known set of working requirements - Stakeholder familiarity (*minimal additional change management*) - Already in production and two-thirds done - MN-specific customization design and development	- Known requirements may be incomplete - Mixed track record of release delivery - Lack of expertise developing vehicle systems and limited exposure to other possible processes or approaches - Lack of self-service capability - Complex items left until the end with risk of unknown unknowns - Contractor workforce introduces risk - Expense of MN-specific customization - Limited bandwidth of DPS Staff, critical to both development and implementation

Packaged Software Solution	
Advantages	**Disadvantages**
- Proven success and stakeholder satisfaction - 12 states showing it works - Greater functionality (*benefit of other states' improvements*) out of the box - Self-service module - User forum for sharing best practices - Constant/ongoing improvements - Strict adherence to acceptance criteria	- Risk of error with another data migration - Generalized functionality for all states slows users down - End-user Change Fatigue - Possible departure of key MNLARS staff prior to decommissioning - Giving up full control and ownership of base code - Limited bandwidth of DPS Staff, critical to both requirements development and implementation

In addition to benefiting from the collective knowledge of the other state customers, the Review Team would also like to call special attention to the fact that there is a self-service module available with the Packaged Software Solution. This feature was considered by the MNLARS team, but the agency reportedly chose not to include this in the requirements.

Recommendation 10: **DPS should consider including self-service as a requirement for the vehicle system.**

Review Summary

RESPONSE TO THE LEGISLATURE REGARDING MNLARS

To answer the legislature's questions, the Review Team gathered feedback from stakeholders and evaluated whether their concerns were accounted for in the MNLARS roadmap. We are confident that the roadmap does account for all ranked defects and gaps identified by external end users. Though risky given the need to onboard so many new team members, (all with limited or no experience building a driver services system) we do believe the team could complete the build by June 2021 with the expected funding. We are not confident however that stakeholders will be satisfied. Going into an accelerated RFP process for a packaged software solution is more likely to lead to success. The state-specific domain knowledge from the MNLARS team is made stronger when paired with the expertise of a packaged third-party vehicle system software solution provider.

The MNLARS Roadmap <u>accounts for</u> all ranked items classified as critical, high and medium defects and gaps identified by external end users.

DPS and MN.IT <u>do not have</u> the necessary technology, software development processes, and staffing plans to correct all current critical, high, and medium defects and gaps, as identified by external end users, that do not require major architectural changes to MNLARS by the end of calendar year 2019.

The MNLARS Roadmap <u>accounts for</u> all required back end work, including decommissioning legacy systems.

DPS and MN.IT <u>have</u> the necessary technology, software development processes, and staffing plans to fulfill all required back end work, including decommissioning of the legacy system by the end of fiscal year 2021, given full development, operating, and maintenance funding as proposed in the governor's February 2019 budget

DPS and MN.IT <u>would be</u> more apt to succeed in meeting project deliverables and timeframes, within the funding as proposed in the governor's February 2019 budget, by adopting a commercial off-the-shelf software solution or an outsourced service to replace all or part of the MNLARS functionality.

ADDITIONAL RECOMMENDATIONS

The Review Team documented a variety of general recommendations, not specific to MNLARS but for MN.IT generally, as well as for the agencies it services. Though these may also apply to MNLARS, these may be more appropriate for referral to the Blue Ribbon Council, which is tasked with reviewing the structure of IT for the state of Minnesota.

With any MN.IT build project, the greatest chance at success comes when accountability for specific deliverables shifts to an outsourced service provider that brings experience and rigor to the project, ensuring that the burden of failure is shared. Third-party service providers are more likely to accept outcome-based contracts (with accountability for key performance indicators) when they are the sole provider, for the entire project – or at least for an entire function (e.g. QA). When responsibility for the project and/or for a specific activity is spread across multiple vendors, they will be less willing to accept accountability.

For example, the Review Team understands that MN.IT is in active contract negotiations with a third-party service provider for the development resources to complete MNLARS. The MNLARS Team was planning also to contract with a different service provider for the project's quality assurance work. The Review Team believes based on its experience that splitting the risk between two different vendors substantially reduces the chances of success. A single service provider, suitably incented by additional financial gain for meeting key performance indicators hold the best promise for successful outcome.

That said, MN.IT should not be the application builder for the state's large applications. MN.IT's expertise needs to be in creating specifications with the subject-matter-expert (SME) agency, ensuring a good RFI and RFP process for best value for the solution, and partnering with the agencies on contracting, program management testing, and acceptance. Importantly, MN.IT should develop expertise in designing an ecosystem for the state - an overall enterprise plan and architecture - so that each piece that is bought or built fits into a comprehensive whole. In the execution of that plan, MN.IT is accountable for fully understanding if the core SMEs on the business side and experienced technical talent are in place.

> **Recommendation 11:   Where appropriate, MN.IT should seek to leverage packaged software solutions.**

The Review Team also recommends that before MN.IT and any agency begin a search to replace a large comprehensive application, they assess the laws, rules and regulations that govern the area in question and recommend to the legislature changes in statutes and changes in rules and regulations to simplify requirements, as aligning processes to as many other states as possible will facilitate better responses from third party vendors and reduce the need for customization.

> **Recommendation 12:   Evaluate and simplify business processes, rules and regulations before replacing a large, comprehensive application.**

Establishing best practices for future technology development can improve the customer experience, speed up procurement and improve the likelihood of project success. For example, a current bill calls for an open API so that Electronic Vehicle Titling and Registration (EVTR) providers can access the

vehicle data thus opening it up to all suppliers rather than just one. This is a great idea that need not be limited to EVTR. A bill requiring an open API, whenever possible and appropriate, would be more impactful.

> **Recommendation 13:** **In cases where third party systems need to connect to a State IT system, the Review Team recommends building an open API rather than building an API for a single third-party provider.**

Large software development programs, Build and Buy alike, need a steady stream of funding from the beginning until the end. It is problematic that program funding cannot currently be appropriated beyond the bounds of a legislative session or biennium. The State must eliminate the stop/start of funding due to fiscal periods or legislative sessions.

> **Recommendation 14:** **MN.IT should build out the state's enterprise IT architecture and evaluate all future solutions in that context.**

Once the full vision is identified for a large scale IT project, the program can plan and build a series of business changes, supported by technology, each change requiring fewer than 12 months. This full vision should be funded in a way that gives the legislature authority over the spending authorization generally, but gives the project team flexibility to address the highest priority issues, with priority determined through close collaboration between the technology team and the relevant agency. Several of the challenges (and in some cases added expense) with MNLARS arose out of restrictions placed on the team by outside parties. For example:

- the 2009 Real ID implementation prohibition prevented the MNLARS team from preparing for compliance and related process and technology changes. The late reversal of that ban left the team with a very short timeline and the need to follow an emergency procurement path and ultimately pay more for the packaged software solution than would have been required with a typical procurement and a non-rushed development and implementation timeline;

- There are several legacy tools that still need to be retired. The amount of effort required for this is unknown, in part because MNLARS development was restricted to addressing external end-user pain points only. This forced the MNLARS team to readjust their roadmap and waste precious time (and therefore money) reprioritizing backlog items. It also increased risk of failure by backloading potentially challenging development activity.

> **Recommendation 15:** **The legislature should not be overly prescriptive with funding restrictions but rather allow agency leaders to use allocated funds within the program to the areas they think most appropriate (features, support, backlog).**

Of course, with greater freedom, it is necessary to closely monitor progress, with relevant reporting by the project team and by internal auditors. By establishing accountability along the way using stage gates and reporting, agencies can avoid or minimize risk of failure. At certain program milestones, the project team can report out to designated bodies before continuing. For larger projects, it may also be appropriate to engage external auditors to evaluate the vision and buy-in from stakeholders, the project team and their methodology, and the roadmap and their progress against it.

Recommendation 16:   **Oversight should be provided for large IT projects (including by the agency, by the OLA or by external auditors).**

The failure of MNLARS and resulting restart(s) double or triple planned investment, demonstrating that MN.IT and its stakeholder agencies do not have the experience to successfully run such large projects in a single step. To help avoid additional failures with other large IT projects, the Review Team suggests that the Blue Ribbon Council address the recommendations in this section.

Appendix

The data, meetings and documents referenced in each section below provided context to the Review Team in their analysis of the risks and opportunities associated with the MNLARS Build and Packaged Software Solution Buy options.

APPENDIX 1: MNLARS RELATED DATA

The statistics below were provided to the Review Team. They provide context related to the size, scope and structure of the MNLARS project and system.

VOLUME AND COMPLEXITY OF DATA
- 11m   vehicles in the system
- 9m   current registrations
- 93m   data records converted pre-MNLARS
- 1400   fee types (1200 plate type fees)
- 280   plate types
- 31   vehicle registration classes

PROJECT TEAM MEMBERS
- 5   MN.IT MNLARS staff (all other technical resources are contractors)
- ~40   DPS exam entry agents (reviewing applications)
- 12   Liaisons (2 doing MNLARS testing; 1 open)

VOLUME AND TYPE OF TRANSACTIONS
- 1.4m   plates issued annually
- 139K   title apps handled/month (average)
- 33K   law enforcement inquiries per day (MBCA)
- $1.6b collected in MV taxes, fees

VOLUME AND TYPE OF SYSTEM USERS
- 3500   'access units' (org or entity that provides services)
- 4500   organizations authorized to access vehicle services data (DPS, Registrars, Towing, etc.)
- 9000   authorized users (excluding law enforcement)
- 180   user roles
- 10   Deputy Registrar office regions
- 174   Deputy Registrar offices (1800 employees)
- 127   DL agents
- 2900   dealers (4500 employees)
- 2700   other org employees (state, local, towing, insurance, lenders, etc.)

VOLUME OF SYSTEM REQUIREMENTS
- 1500   initial requirements documented by Mathtech in 2009-10 (not sufficiently detailed)
- 1750   items of functionality identified by DPS in 2013

APPENDIX 2: STAKEHOLDER REVIEW

In addition to explicitly asking for their assessment of MNLARS, the Review Team explored a range of related topics with each stakeholder interviewed. These included:

- How long did transactions take prior to MNLARS, after the release of MNLARS and currently? How do these transaction times compare to needs?
- How was stakeholder input gathered for original development? How are stakeholders currently involved in the development process? Are stakeholder needs effectively prioritized and represented in each release?
- What training and support was provided upon release and since? Does it effectively address the needs of stakeholders?
- How do stakeholders feel about the current state of MNLARS and the ability of the MNLARS team to complete the software to their satisfaction?

The stakeholders who participated in the interviews indicated that there was universal agreement that MNLARS was not satisfactory at the time of release in July 2017. Opinions varied about the current state of MNLARS. Some were adamant that MNLARS cannot be saved, that the functionality for even basic transactions is cumbersome and that functionality for certain special transactions is nonexistent. Others adamantly asserted that the system is stable, most necessary functionality already exists and that scrapping MNLARS would be a mistake. This section expands on the information gathered from the stakeholders. This section also reviews the metrics used by the MNLARS project team in its updates to stakeholders.

The Review Team interviewed Deputy Registrars from offices that are privately owned as well as Deputy Registrars from offices that are run by local municipalities, cities or counties. The Review Team considered the perspective of The Minnesota Deputy Registrars Association, an affiliation between all 174 Deputy Registrar offices, and the Deputy Registrars Business Owner Association, representing those which are privately owned. The Review Team also considered the perspectives of the Minnesota Auto Dealers Association, Insurance Federation of Minnesota, Auto Auctioneers Association and Law Enforcement. Their review and interviews also included leadership and staff from multiple agencies.

Based on aggregation of all interviews, the Review Team concluded that, to provide quality service to citizens, Deputy Registrars need to complete transactions quickly, accurately and fully during a customer's initial visit. Auto dealers and salvage owners need a seamless flow of inventory. Law Enforcement, lenders and insurance companies need rapid access to accurate data. DPS needs to confirm that they have accurately collected all authorized revenue and needs to efficiently support Deputy Registrars' operations, including answering their queries, reviewing and approving transactions, and conducting audits to ensure compliance.

Stakeholders, internal and external, broadly agreed that the July 2017 release of MNLARS was ineffective and extremely impactful to their efficiency and effectiveness in delivery of services to citizens. The OLA has detailed these issues in its April 2019 report. As part of the interviews, many internal and external stakeholders who were involved in the user acceptance testing noted that they strongly recommended against the July 2017 release as they believed the system was not sufficiently

complete for release. MN.IT leaders, DPS leaders and the project team recognize this issue and have established processes to prevent recurrence in any future releases

In this section, the Review Team will highlight several key findings related to stakeholder satisfaction that were considered as part of its recommendation.

Deputy Registrar Experience

The Review Team received feedback from Deputy Registrars who prefer to continue with the MNLARS build. In general, their perspective can be summarized by the feeling that the worst is over, they have weathered the storm and this group describes MNLARS as 75-95% complete in terms of capability that they require. Their consensus was that things don't work efficiently, but it generally works and their office has known workarounds for key issues. This subset indicates that their teams have been significantly impacted by all the change to-date, and they prefer a future path that minimizes change. In general, more public and larger Deputy Registrars are represented in this group. This group wants to continue with MNLARS build.

In contrast, the Review Team also received feedback from Deputy Registrars who prefer a dramatic change and support buying a Packaged Software Solution. In general, their perspective includes unresolved issues with MNLARS, ongoing loss of productivity, unanswered calls and emails, time consuming workarounds and reports of inaccurate data that could impact revenue, identity and public safety. This group is dominated by private registrars. They report costs and efficiency of operating a Registrar's Office has significantly worsened with the introduction of MNLARS – partly due to process and partly due to system failures and inaccurate data. This group favors replacing MNLARS with a Packaged Software Solution product.

Several of the following topics were raised by the Deputy Registrars.

Deputy Registrar Efficiency: A Deputy Registrar time study, performed at the request of the Minnesota Deputy Registrar Association, evaluated the time to complete registration and title transactions at public, private, metro, non-metro, small, and large Deputy Registrars. The average time to complete transactions has increased, due in part to the fact that subsystems such as Prorate were dropped, data entry work shifted to Deputy Registrars and they were given little or no control to edit incorrect data.

Time in minutes	Pre-MNLARS		Post-MNLARS	
Transaction Type	**Average Overall**	**Range of averages by office type**	**Average Overall**	**Range of averages by office type**
Registration	**2.94**	1.89 – 3.68	**4**	3.1 – 4.7
Title	**5.86**	2.03 – 8.52	**7.3**	4.5 – 12.5

Deputy Registrar Wasted inventory: Deputy Registrars describe wasting inventory due to MNLARS system's inability to edit inaccurate data and to complete multi-step transactions in one 'cart'. The

current work-around described by Deputy Registrars reportedly results in waste of inventory, waste of time and possible inaccuracy.

Deputy Registrar Business Operations: Deputy Registrars report that end of day audits and inventory management is made difficult by the lack of detail available in MNLARS reports. They also report significant inefficiency due issue related to scanning and unattached documents. These issues have also reportedly resulted in significant delays for citizens and significant behind-the-scenes work by agencies.

DPS Experience

DPS Efficiency: The Review Team received consistent feedback from both Deputy Registrars and DPS staff about the need for additional editing and better auditing functionality. This would reportedly enable greater ability to correct inaccurate information, without losing work and wasting inventory.

Audit Accuracy: Auditors reportedly need better tools to manage and monitor inventory and complete end of day reconciliation.

DPS Support Staffing: The Review Team received consistent feedback from Deputy Registrars and DPS liaisons alike reporting that strong relationships have formed between them. But both entities report that DPS liaisons were understaffed and completely overwhelmed by the barrage of calls and emails that flooded in after the initial MNLARS release. After the February 2019 MNLARS release, Liaisons are just beginning to return to a more manageable workload, but the call and email volume is still high, and Deputy Registrars and other external stakeholders (e.g. lien holders, insurance companies) often must wait longer than is acceptable for assistance.

DPS Issue Tracking: The Review Team also received consistent feedback related to intake forms and issue tracking. Reportedly, issues are forwarded on forms to the appropriate DPS or MNLARS team to be addressed, but there is no follow-up alerting resolution of the problem, driving inefficiency for DPS and other stakeholders.

Auto Dealers Experience

Auto dealers both through their Minnesota Auto Dealers' Association and several representatives of a large dealership group expressed similar dissatisfaction with MNLARS at rollout and continuing to the present. Many comments had been previously heard such as vehicle titling, resale transfers, etc. with a new addition. The selection of Synadapt for the MNLARS Electronic Vehicle Titling and Registration (E-VTR) solution provider in MNLARS. Synadapt was reportedly selected in a lowest bidder award. According to the Dealers interviewed, Synadapt had never implemented an E-VTR software unlike the incumbent vendor CVR, which was preferred by those interviewed. CVR interfaced with the majority of dealer management software systems--Synadapt did not. The stakeholders interviewed reported ongoing issues and dissatisfaction with this decision.

Experience of the citizens of Minnesota

The Review Team did not interview citizens interacting with the MNLARS process via Deputy Registrars, Dealers, Insurers or others. The Review Team did observe lines and citizen reaction to the speed of the transaction when it visited and spent time near the counter of two different Deputy Registrar offices during business hours. The review also received reports of average, median and extreme waits times for registrations and titles as well as critical functions such as transfer of plates for disabled citizens which are not enabled in MNLARS at the time.

The Review Team also considered future-proofing of the MNLARS system from the perspective of Minnesota's citizens. The Review Team did not find the degree of future planning related to user experience that would be ideal for this type of system; for example, the ability to transition to self-service.

APPENDIX 3: MEETINGS

The table below summarizes all meetings held or attended by any member of the Review Team, as they pursued more detailed understanding of the risks and opportunities associated with the MNLARS Build and Packaged Software Solution Buy options.

Date	Topic(s)	Attendees
3-1-2019	Review past and current MNLARS development Evaluate the need for emergency funding.	Review Team (Rick King, Theresa Wise, Dean Hopkins, Amy Albus)
	Gather information about the OLA review of MNLARS development.	Review Team (Rick, Theresa)
	Enterprise security practices for DPS MNLARS security	Review Team (Dean)
3-7-2019	Discuss legislation just passed.	Review Team (Rick)
3-14-2019	MNLARS background Current project status Go forward project plan	Review Team (Mick Atton, Amy)
	MNLARS Product development approach MNLARS features MNLARS Technology approach	Review Team (Mick, Amy)
	QA approach historically, go-forward	Review Team (Mick, Amy)
	MNLARS history, MN.IT bidding & contracting approach	Review Team (Mick, Amy)
	MN.IT security policy, approach	Review Team (Mick, Amy)
	Executive view of MNLARS, future concerns (e.g. looming FASTDS cost)	Review Team (Mick, Amy)
	Recap of day's activities, questions, plan for future meetings, data integrity approach	

		Review Team (Mick, Amy)
3-15-2019	detailed view of MN.IT security policy and project engagement	▮▮▮▮▮▮▮▮
		Review Team (Mick)
	MNLARS technology & architecture overview	▮▮▮
		Review Team (Mick)
3-18-2019	MNLARS technology & architecture deep dive	▮▮▮
		Review Team (Mick)
3-19-2019	Discuss Independent Review.	▮▮▮▮▮▮▮
		Review Team (Rick)
3-21-2019	COBIT 5 rationale, rollout	▮▮▮▮▮
		Review Team (Mick)
	MNLARS legacy system overview, requirements, RFI engagement, issues facing a MNLARS replacement	▮▮▮
		Review Team (Mick)
	MNLARS engagement with Deputy Registrars	▮▮▮▮▮▮
		Review Team (Rick, Mick)
	MN RFI process and April 18 MNLARS replacement RFI evaluation	▮▮▮
		Review Team (Rick, Mick)
3-25-2019	perspectives on MNLARS--experience, gaps, plan, workarounds	▮▮▮▮▮▮▮
		Review Team (Rick, Mick)
3-26-2019	RFI status, general MNIT finance approach, request for historical MNLARS data	▮▮▮
		Review Team (Mick)
	Current MNLARS planning, estimating technique	▮▮▮
		Review Team (Mick)
3-29-2019	Detailed view of MNLARS development plan, roadmap, headcount, financial model	▮▮▮▮
		Review Team (Rick, Mick)
	go-forward, proactive approach for InfoSec in MNLARS project	▮▮▮
		Review Team (Mick)
	MN.IT finance controls incl. depreciation impacts, 5-year cost-to-own analysis, RFP approaches including ability to fast path an expedient selection	▮▮▮
		Review Team (Rick, Mick)
	perspectives on MNLARS--experience, behind-the-counter demos, gaps, plan, workarounds – at DR site.	▮▮▮▮▮▮
		Review Team (Rick)
4-4-2019	Detailed view of latest MNLARS development plan, roadmap, headcount, financial model	▮▮▮

Date	Description	Review Team
		Review Team (Rick, Mick, Theresa, Amy)
	Detailed view of latest MNLARS development plan, roadmap, headcount, financial model including RFI costs for various "buy" options	████
		Review Team (Theresa, Mick, Amy)
4-8-2019	perspectives on MNLARS--experience, behind-the-counter demos, gaps, plan, workarounds.	████
		Review Team (Rick, Amy, Mick)
4-10-2019	MNLARS perspective from business owner	████
		Review Team (Rick, Mick)
	MNLARS perspective from business owner	████
		Review Team (Amy)
	MNLARS perspective from business owner	████
		Review Team (Rick, Amy, Mick)
	deep dive into "buy" financial model	████
		Review Team (Amy, Mick)
4-11-2019	perspectives on MNLARS--experience, gaps, plan, workarounds	████
		Review Team (Rick, Amy, Mick)
4-12-2019	perspectives on MNLARS--experience, gaps, plan, workarounds	████
		Review Team (Rick, Amy, Mick)
	perspectives on MNLARS--experience, gaps, plan, workarounds	████
		Review Team (Rick, Amy, Mick)
	perspectives on MNLARS--experience, gaps, plan, workarounds	████
		Review Team (Rick, Amy, Mick)
4-15-2019	perspectives on MNLARS-- QA experience and bid for dev work	████
		Review Team (Rick, Amy, Mick)
	Packaged Software Solution development and implementation in NM	████
		Review Team (Rick, Amy, Mick)
4-16-2019	perspectives on MNLARS--experience, gaps, plan, workarounds	████
		Review Team (Rick, Amy)
4-17-2019	perspectives on MNLARS--experience, gaps, plan, workarounds	████
		Review Team (Mick)
	monthly meeting for MNLARS principal stakeholders	████

Date	Description	Attendees
		Review Team (Mick)
	perspectives on MNLARS--experience, gaps, confidence	Review Team (Mick)
	perspectives on MNLARS--experience, gaps, confidence	Review Team (Mick)
4-18-2019	perspectives on MNLARS--experience, gaps, confidence	Review Team (Mick)
4-19-2019	Packaged Software Solution financial model	Review Team (Mick)
	Packaged Software Solution development and implementation in WA	Review Team (Rick, Theresa, Amy, Mick)
	Packaged Software Solution functional presentation	Review Team (Rick, Theresa, Amy, Mick)
4-25-2019	Packaged Software Solution development and implementation in UT	Review Team (Rick, Amy, Mick)
5-3-2019	Packaged Software Solution development and implementation in CO	Review Team (Rick, Theresa, Amy, Mick)

APPENDIX 4: DOCUMENTS

The table below lists collected by the Review Team as part of their analysis of the risks and opportunities associated with the MNLARS Build and Packaged Software Solution Buy options.

03202019 ESC Minutes	MNLARS Risks Program Project
Addendum 1_Question 13 Interface List_Final	MNLARS- SSP
Annotated Cost Comparison 10-year Buy vs Build_PN_4122019	MNLARS Test Closure Report for 1.14
Annotated Cost Comparison 10-year Buy vs Build_PN_4192019	MNLARS Test Closure Report for 1.15
Annotated Cost Comparison 4.24.2019	MNLARS Test Closure Report for Release 1.15
Annotated Costs 4122019	MNLARS UAT Test Closure Report - Post 1.15 Database Change
BIS - RFI Followup Template v2 BIS response	MNLARS UAT Test Closure Report - Release 1.14
BIS Summary Milestone Schedule	MNLARS UAT Test Closure Report - Release 1.15
Celtic - RFI Followup Template v2 - final	MNLARS White Paper 1
Combined PowerPoint Presentation	mnlarsaccuracy
combined PowerPoint Presentation draft - for review_JRUpdates_032819 – TJA	mnlarsfactors
Cost Comparison 10-year Buy vs Build	MNSITE RFO 1414 Buyer Attachment - Eval Criteria
Cost Comparison MNLARS_PN_04022019_DRAFT_updated 330pm	MNSITE RFO 1414 Buyer Attachment Tasks and Qualifications
CPA time and motion DL report 4.2.18 preFAST	MNSITE RFO 1414 equalpaycertificate form
Deploys since Go live with Defects and Stories listed as of 02-20-2019	MNSITE RFO 1414 Event
Deputy Registrar Transaction Count and Filing Fee Total by Month for Calendar 2018	MNSITE RFO 1414 Event Terms and Conditions
Deputy Registrar Transaction Count and Filing Fee Total by Month for Calendar 2018	MNSITE RFO 1414 lobbying form
Deputy Registrars - Public v Private 004222019	MNSITE RFO 1414 WorkForceCert form
DL Report	MNSITE RFO 1449 Buyer Attachment - Eval Criteria
DPS MNLARS Perf Scan Executive Summary Report - mnlarsperf.dvs.dps.mn.gov-presentation-Authenticated_2-22-2019[1]	MNSITE RFO 1449 Buyer Attachment-Deliverables and qualifications
DR Office Map	MNSITE RFO 1449 equalpaycertificate form
DR Site List	MNSITE RFO 1449 Event
Driver and Vehicle Executive Steering Committee Presentation Release 1.16	MNSITE RFO 1449 Event Terms and Conditions
Driver Vehicle Govs Recommended Budget	MNSITE RFO 1449 lobbying form
FAST - RFI Followup Template v2	MNSITE RFO 1449 WorkForceCert form
Fast SCR Report 3-29-2019	NPQ.PPQ Weekly Tracking
Lesiglative Response to RFI_Commissioner Dohman_7-23-2018	OLA Audit Overview of MNIT
Master List_new version	OLA MNLARS Accuracy
MDRA Time and Motion MV study preMNLARS	OLA MNLARS Factors
MNLARS - product and deliver strategy	OLA MNLARS Quarterly Report April 2019
MNLARS- Residual Risk Assessment	Other States experience
MNLARS Database Fixes Test Closure Report _Post Release 1.15	Registration renewals by type by month 2018

MNLARS Database Fixes Test Closure Report _Post Release 1.15	Registration renewals by type by month 2018
MNLARS Quarterly Audit Nov 2018	RFI Addendum 1_Final
MNLARS Quarterly Update 12/10/18	RFI Solicitation Document_Final
MNLARS Quarterly Update 4/30/18	RFI Submission_Business Information Systems_Original & Un-redacted
MNLARS Quarterly Update 6/11/18	RFI Submission_Celtic Systems_Original & Un-redacted
MNLARS Quarterly Update 9/11/18	RFI Submission_FAST Enterprises_Original & Un-redacted
MNLARS Remaining Development Roadmap – 041219	Selected Release 1.16 Candidates 04122019
MNLARS Remaining Development Roadmap – 20190225	Summary and Chart
MNLARS Remaining Development Roadmap – 20190228	Transactions By Office By Month - Driver Services
MNLARS Remaining Development Roadmap – 20190301	WSU time and motion MV report 12.17.18
MNLARS Remaining Development Roadmap – Mar Updates	MNLARS Remaining Development Roadmap – Mar Updates
MNLARS Risk and Issues	

April 28, 2019

Rick King
Thomson Reuters
610 Opperman Dr
Eagan, MN 55123

Dear Mr. King,

Thank you for your work conducting this independent expert review of MNLARS and analysis of buy vs. build options moving forward. Your team was professional at all times, and we appreciate their very committed efforts to develop a strong recommendation. While your report identified that MNLARS has sound architecture and a solid plan exists to complete the remaining project deliverables by June 2021, you identified a number of risk factors which weigh against continuing to develop MNLARS as planned and recommend proceeding with the procurement of a packaged software solution.

With a very significant investment still required to finish the MNLARS system and retire and replace all associated DVS legacy systems, it was prudent to examine potential directions moving forward. Your report makes clear that both the build and the buy approach are viable options for the State. While it is a difficult decision to change course and invest more in order to procure a vendor system, we agree with your recommendation to replace MNLARS with a packaged software solution. Our agreement should not be understood as reflecting a lack of faith in the current MNLARS team, as their abilities have been proven out over the course of eight successful software releases in the last 16 months, and we appreciate your findings recognizing these efforts. Rather, we agree with your recommendation because of the opportunity that lies before the State of Minnesota to join a larger ecosystem of innovation and business process improvement that will benefit DVS, its stakeholders, and the people of Minnesota for years to come. Future-proofing this system is the only way to ensure sustained success in the evolution of driver and vehicle services, as Minnesotans do and will continue to expect an up-to-par experience when interacting with their digital government.

This change of course will undoubtedly bring another round of significant change to DVS, deputy registrars and other stakeholders; however, we believe the future benefits of moving to a vendor technology solution with other state governments will outweigh the disruption experienced in the short term. While procurement of a vendor technology system will require more investment in the near term - relative to continuing on with a custom build - we believe that Minnesota's ability to

leverage future vendor upgrades, research and development investment, and the innovation of other states makes this approach a sound financial decision in the long term.

Your report also identifies areas where improvement is needed to ensure the future success of this project, regardless of the development option. As you aptly stated in your report, "Developers cannot build what stakeholders want unless someone is able to elicit and then accurately detail their need." We agree fully and are committed to addressing these issues moving forward.

Your report also highlights numerous examples of the negative impact of inadequate staffing levels on citizens and end users. The Governor's budget addresses your recommendations, and those of the OLA, to prioritize the onboarding of qualified business analysts, and support sufficient staffing levels to meet the needs of Minnesotans, Deputy Registrars and other external end users. While there may be discomfort in growing government, we have proven additional staff will result in decreasing turnaround times and faster response to calls for assistance. In just one month with 79 additional staff we have driven down the turnaround time for enhanced driver's license over 20 days. When they leave at the end of the fiscal year, the backlog numbers will unfortunately increase again along with the frustrations of Minnesotans.

Your report also highlights how, for any technology project, sufficient flexible funding must be available for its development and ongoing maintenance and support. Our experience echoes your recommendation to allow agency leaders "to use allocated funds within the program to the areas they think most appropriate (features, support, backlog)."

The State of Minnesota has many large, complex vendor-procured IT systems in its enterprise portfolio. At the same time, custom software development can be required to meet unique business needs. However, when a mature vendor marketplace exists with critical customer mass, it provides the greatest opportunity for successful outcomes and innovation to meet current and future needs. These build vs. buy decisions must be driven by a clear business case, a thorough review of products in the marketplace, and a sober recognition of the inherent risks and challenges involved. Ultimately, regardless of the approach to system development and implementation, we as state business and technology leaders remain accountable for the outcome and the realization of value from the investment.

There is no silver bullet to ensure project success. Rather, there is an array of best practices and risk-reduction measures that must be utilized to maximize the chances of success. Recognizing the complexity of statutes surrounding driver and vehicle services, the need to modernize the associated service delivery model, and the significant cost of keeping pace with changing technology, we agree with the recommendation in this case to reduce project risk by pursuing procurement of a vendor technology solution.

We look forward to working with you and the entire Blue Ribbon IT Council as we work to implement best practices consistently across the executive branch. Your dedicated service to the State of Minnesota through this effort and the work of the Council moving forward is greatly appreciated.

Sincerely,
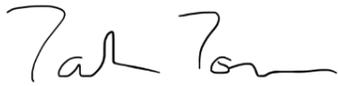
Tarek Tomes
Commissioner and State Chief Information Officer
Minnesota IT Services
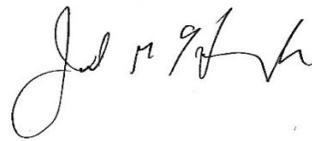
John M. Harrington
Commissioner
Minnesota Department of Public Safety

William Poirier
Former Acting Commissioner and State Chief Information Officer
Minnesota IT Services