Minnesota Vehicle Title and Registration System

Final Project Audit

July 2022

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OFFICE OF THE LEGISLATIVE AUDITOR

STATE OF MINNESOTA

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STATE OF MINNESOTA • Judy Randall, Legislative Auditor

July 28, 2022

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Minnesota IT Services

This report presents the results of the Office of the Legislative Auditor's final audit and retrospective of the Vehicle Title and Registration System (VTRS) project. Our review examines VTRS through February 2022. The objectives of this audit were to report on VTRS in accordance with *Laws of Minnesota* 2019, First Special Session, chapter 3, art. 2, sec. 32. The law required our office to complete a final audit of the VTRS implementation and decommissioning of the legacy motor vehicle systems, and to identify concerns or risks for the ongoing maintenance and operation of the system. The law also directed us to provide an overall retrospective of the project, including identifying best practices and key lessons learned that may benefit similar projects in the future.

This audit was conducted by Mark Mathison (IT Audit Director) and Joe Sass (IT Audit Coordinator).

We received the full cooperation of the Department of Public Safety, Minnesota IT Services, and Fast Enterprises, LLC staff while performing this audit.

Sincerely,

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Deputy Legislative Auditor

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Introduction

Minnesota has issued license plates since 1902 and driver's licenses since 1934; however, the state did not combine the two functions until the Department of Public Safety (DPS) was established in the 1970s.[1] As one of the department's largest divisions, Driver and Vehicle Services (DVS) oversees the administration of programs and services that impact millions of Minnesotans, including vehicle title and registration services, driver's license issuance, driver safety compliance, commercial vehicle registration and federal fuel tax collection, crash data record maintenance, and automotive dealer licensing. DVS has partnerships with law enforcement; local, state, and federal agencies; courts; and deputy registrars and driver's license agents; all of whom rely on the information and services DVS provides.

For decades, the Department of Public Safety (DPS) utilized individualized legacy mainframe systems for processing motor vehicle and driver-related transactions. In 2008, Minnesota began a multiyear project to replace its aging mainframe driver's license and vehicle registration systems. The goal was to develop one fully integrated, modern system—the Minnesota Licensing and Registration System (MNLARS).

After an unsuccessful system implementation and numerous complaints, the 2019 Legislature, following the recommendations of the *Independent Expert Review of MNLARS*, directed DPS and Minnesota Information Technology Services (MNIT) to replace MNLARS with a new, vendor-produced, software application.[2] The law outlined an aggressive project timeline for the new Vehicle Title and Registration System (VTRS), with an initial launch by the end of calendar year 2020. The law also required full implementation of VTRS and a complete decommissioning of MNLARS and the other remaining legacy motor vehicle systems by the fall of 2021.

The Legislature identified DPS as the owner of VTRS and made the agency responsible for the final decisions on functionality. MNIT was made the technical lead, responsible for final decisions on the implementation of technology products, services, and staffing. Through a competitive bid process, DPS and MNIT awarded the VTRS contract to Fast Enterprises, LLC (FAST). FAST had also supplied the state's driver's licensing system in 2018, providing driver's licensing functionality that had originally been intended to be a component of MNLARS.

Work on the VTRS system began in the fall of 2019, as deputy registrars and other end users continued to use MNLARS—still with many workarounds—for processing vehicle titling and registration transactions. By November 2020, DPS, along with MNIT and FAST, released Rollout I of VTRS. This first rollout served as a replacement for MNLARS and an upgrade of the FAST driver's license system, combining the two into a single system. This new, integrated system was branded as

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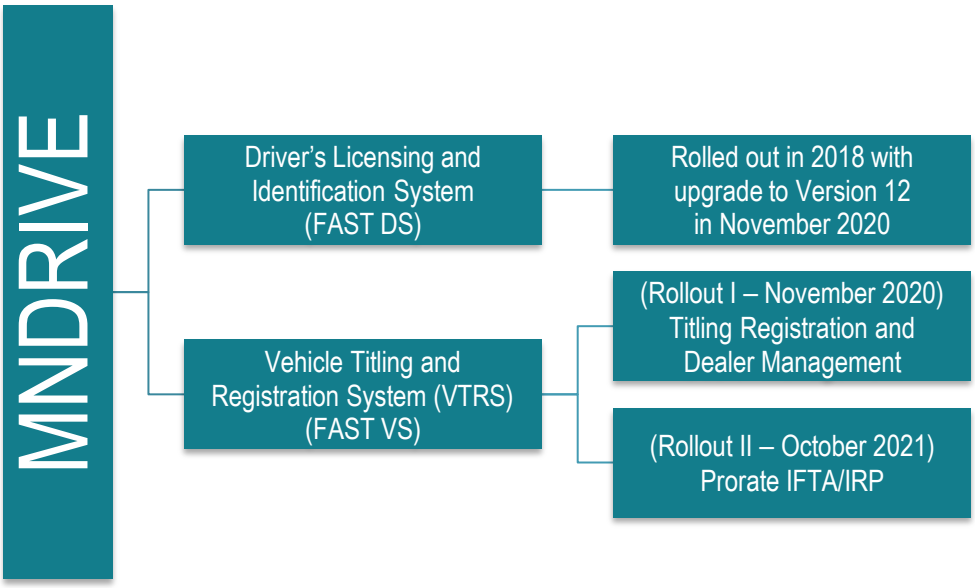
[1] *Laws of Minnesota* 1969, chapter 1129, art. 1.

[2] Rick King, Theresa Wise, Mick Atton, and Amy Albus, *Independent Expert Review of MNLARS* (May 1, 2019), 3, https://dps.mn.gov/divisions/dvs/forms-documents/Documents/independent-expert-review-of-mnlars.pdf, accessed March 1, 2022; and *Laws of Minnesota* 2019, First Special Session, chapter 3, art. 2, sec. 35.

the Minnesota Driver and Vehicle System (MNDRIVE). After the success of Rollout I, MNIT decommissioned MNLARS and other—now replaced—legacy systems in March 2021. Project work continued through October 2021, when DPS, MNIT, and FAST completed and released Rollout II of VTRS. This rollout provided International Fuel Tax Agreement (IFTA) and International Registration Plan (IRP)—also known as Prorate—functionality for motor carriers. Exhibit 1 reflects the buildout phases and FAST modules that make up MNDRIVE.

Exhibit 1: MNDRIVE Buildout Phases



SOURCE: Office of the Legislative Auditor.

The 2019 law that called for the VTRS implementation also included requirements for the Office of the Legislative Auditor (OLA) to provide quarterly reviews on the project implementation, stakeholder engagement, and MNLARS decommissioning efforts. Over the lifespan of the project, OLA submitted seven quarterly reports to the Legislature.[3] Due to the overall success of the VTRS implementation, these reports identified generally minor risks and concerns that could have jeopardized meeting the project timelines or deliverables.

Following the succesful implementation of VTRS and decommissioning of MNLARS and the legacy driver and vehicle systems, OLA has completed a final audit of the VTRS project, as required by the 2019 law. This report provides a final review of the VTRS implementation and an overall retrospective of the project, including a discussion of key factors that contributed to the success of the project and opportunities for additional improvement for future projects. As the State of Minnesota embarks on new projects to modernize large, complex information systems, MNIT and state agencies should consider the recommendations within this report—repeating those factors that contributed to the success of VTRS and incorporating additional improvements—to better improve the chances for successful IT projects in the future.

[3] See https://www.auditor.leg.state.mn.us/fad/fadsubj.htm#it.

Report Summary

This report presents the results of the Office of the Legislative Auditor's (OLA's) final audit and retrospective of the Vehicle Title and Registration System (VTRS) projects. Our audit examined the VTRS program—and its related projects—from its initiation in May 2019 to its completion in February 2022. OLA has previously released seven quarterly reviews of the VTRS projects, detailing the status of the implementation and providing a discussion of risks that could have jeopardized the success of the program. The objectives of this audit were to report on VTRS in accordance with legislative mandates that require OLA to audit the implementation of VTRS; review the decommissioning of MNLARS and the legacy driver and vehicle systems; identify risks or concerns for the ongoing maintenance and operations of VTRS; and provide a retrospective of the program, including key lessons learned and best practice recommendations for future projects.[4]

Conclusions

OLA found that the Department of Public Safety (DPS), Minnesota Information Technology Services (MNIT), and Fast Enterprises, LLC (FAST) successfully launched the Vehicle Title and Registration System (VTRS) and replaced MNLARS following the first system rollout on November 16, 2020. This met the Legislature's intention to launch VTRS by the end of calendar year 2020. The second phase of the project successfully replaced the legacy Prorate system on October 4, 2021, providing International Fuel Tax Agreement (IFTA) and International Registration Plan (IRP) functions for the trucking industry, within the fall 2021 timeline specified by the Legislature.[5]

DPS, MNIT, and its vendors had decommissioned most Driver and Vehicle Services legacy systems and their components in March 2021. However, they decommissioned the Prorate application in February 2022, after the goal established by the Legislature to have all legacy systems decommissioned by fall 2021.

Our review of project expenditures and remaining estimated expenses shows that DPS is expected to complete Fiscal Year 2022 with approximately $5.9 million remaining in the VTRS project appropriation.

With a modernized, functional, and fully integrated system now in place, the future stability and growth of the system will rely upon the agencies' abilities to effectively maintain and support the system. We determined that DPS, MNIT, and FAST are well-positioned to maintain and support the system moving forward. Although we did not identify any significant risks that would jeopardize the ongoing maintenance and operations of the system, we discuss in this report a need for DPS to improve its operational support for IFTA and IRP functions and to improve communication of system changes.

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[4] *Laws of Minnesota* 2019, First Special Session, chapter 3, art. 2, sec. 32.

[5] *Ibid.*, sec. 35, subd. 7.

Finally, throughout the VTRS project, we noted that DPS, MNIT, and FAST largely adhered to best practices for system implementation and modernization, such as those published in 2017 by the American Association of Motor Vehicles Administrators (AAMVA). This report highlights eight key factors or practices that we believe contributed to the overall success of VTRS. However, we also identified six areas in which DPS and/or MNIT could have improved, and we offer recommendations for improvement to DPS, MNIT, and the Legislature.

The contributing factors and recommendations discussed within this report are based on best practices and our professional judgement gleaned from auditing the project from start to finish, yet they should also serve as lessons learned to aid future large-scale information technology projects. The direct applicability of these recommendations may depend on the situations and circumstances impacting future projects. Further best practices, including those published by AAMVA, are referenced in Appendix A of this report.

Key Factors Contributing to the Success of VTRS

Our review identified the following items as key factors that contributed to the overall success of VTRS:

- **Contributing Factor 1:** Project ownership and a commitment to success were present from the highest levels of state and agency leadership down to individual project team members. (p. 34)

- **Contributing Factor 2:** DPS and MNIT purchased a mature, configurable, commercial, off-the-shelf platform with a proven implementation methodology. (p. 35)

- **Contributing Factor 3:** The Legislature put into law a requirement for DPS and MNIT to suspend development of MNLARS. (p. 36)

- **Contributing Factor 4:** MNIT fulfilled its role as a technical advisor to DPS. (p. 36)

- **Contributing Factor 5:** The Legislature provided the full project budget and gave DPS appropriate spending authority. (p. 37)

- **Contributing Factor 6:** DPS reserved part of its appropriation as a contingency for future business needs, legislative additions, other changes, or unexpected requests that could have arisen. (p. 37)

- **Contributing Factor 7:** DPS improved communications with its stakeholders and embedded stakeholder representatives within the project as subject matter experts, testers, and ambassadors. (p. 39)

- **Contributing Factor 8:** A legislative oversight committee and mandated reporting provided guidance and oversight to the project. (p. 40)

Opportunities for Improvement

We identified the following six areas in which MNIT and DPS did not follow best practices or could have improved upon. Recommendations for improvements are noted both within the body of our report and listed on page 41.

- MNIT lacks detailed enterprise-wide systems development lifecycle policies and standards.
- MNIT and DPS did not adequately track some aspects of the VTRS program.
- MNIT and DPS underestimated staffing resources needed for project tasks and continued operational support.
- MNIT and DPS did not ensure that self-service functionality of VTRS met accessibility requirements.
- MNIT does not provide agencies sufficient guidance for developing and managing IT project budgets.
- MNIT has not developed principles to be used during independent audits of state software development projects.

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Background

Vehicle Title and Registration System History

For decades, DPS utilized individualized legacy mainframe systems for processing motor vehicle and driver-related transactions. In 2008, Minnesota began a multiyear effort to replace its aging mainframe driver's license and vehicle registration systems. The goal was to develop one fully integrated, modern system—the Minnesota Licensing and Registration System (MNLARS).[6] In 2009, DPS hired a contractor to gather business and technical requirements for the new system. For the next five years, DPS encountered numerous difficulties working with two separate vendors to develop the system. In 2014, due to vendor performance concerns, DPS ended its vendor contract and brought the development of MNLARS in-house, partnering with MNIT and various subcontractors to finish the system.

In July 2017, DPS and MNIT launched the motor vehicle components of MNLARS. With this launch, the agencies encountered a variety of highly publicized business and technical problems, leading to widespread frustration with both MNLARS and DPS. With federal Real ID deadlines quickly approaching, DPS and MNIT recognized that it was no longer practical to continue internal development of the driver's licensing components of MNLARS. In November 2017, DPS and MNIT contracted with Fast Enterprises, LLC (FAST) to provide off-the-shelf software and implementation services to replace the state's outdated driver's license system. The FAST driver's licensing system (FAST DS) went live in October 2018, without significant issues. Meanwhile, from July 2017 through early 2019, the MNLARS vehicle title and registration components struggled to meet end-user expectations and be a viable system for Minnesotans.

External MNLARS Reviews

Through 2018 and into 2019, the public, stakeholders, and legislators continued to be frustrated with the performance, delays, and cost of MNLARS. In February 2019, the Office of the Legislative Auditor (OLA) published a Special Review of the MNLARS project, *Factors That Contributed to MNLARS Problems*.[7] This review sought to identify the circumstances that played a role in the MNLARS project's troubled history and unsatisfactory 2017 release. A list of the recommendations from this report can be found in Appendix B.

[6] A fully integrated system would allow for the administration of vehicle title and registration services, driver's license issuance, driver safety compliance, crash data record maintenance, dealer licensing, commercial vehicle registration, federal fuel tax collection, and international registration plans.

[7] Office of the Legislative Auditor, Special Review, *Factors That Contributed to MNLARS Problems*, https://www.auditor.leg.state.mn.us/sreview/mnlarsfactors.pdf.

In May 2019, the Governor's Blue Ribbon Council on Information Technology published a report based on its independent review of MNLARS, as directed by law.[8]

While the Blue Ribbon Council noted the significant advances made toward stabilizing and improving MNLARS, the council ultimately concluded that there was less risk in moving forward with a packaged software solution than to continue toward completion of MNLARS. The council also made 16 recommendations for a project to replace MNLARS and for other future software implementation projects. The recommendations from this report can be found in Appendix C.

Vehicle Title and Registration System (VTRS) Implementation

The 2019 Legislature, acting on the recommendations of these reports, put into law a requirement for DPS and MNIT to freeze development of MNLARS and procure and implement a commercial, off-the-shelf vehicle title and registration system (VTRS).[9] The law provided nearly $52.67 million in funding for the implementation project and outlined several requirements for DPS and MNIT.[10] The law also put into place a Legislative Driver and Vehicle Systems Oversight Committee and established quarterly reporting requirements for DPS, MNIT, its vendor, and OLA.[11] With FAST selected as the vendor for VTRS, work began in the fall of 2019 to implement the new system.

Audit Scope, Objectives, Methodology, and Criteria

This report is OLA's final audit of the Vehicle Title and Registration System (VTRS) implementation program, as required by law.[12]

The scope of our audit included implementation of the VTRS/MNDRIVE program. A program is a collection of projects, whereas a project represents a single, focused endeavor. VTRS, and similar large IT system implementations, have multiple subprojects that expand beyond the realm of the IT system itself. As reflected in Exhibit 2, the VTRS program included numerous business process changes, documentation and training updates for various stakeholder groups, website updates for the public, deployment of new scanners to deputy registrars, new credit card terminal machines, a review of self-service options, contract management for external technical vendors, legacy system decommissioning, and more. Together, each of these projects formed a connected package of work, which equated to a new system and, in many cases, new ways of conducting business for DPS and its stakeholders.

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[8] *Laws of Minnesota* 2019, chapter 1, sec. 4.

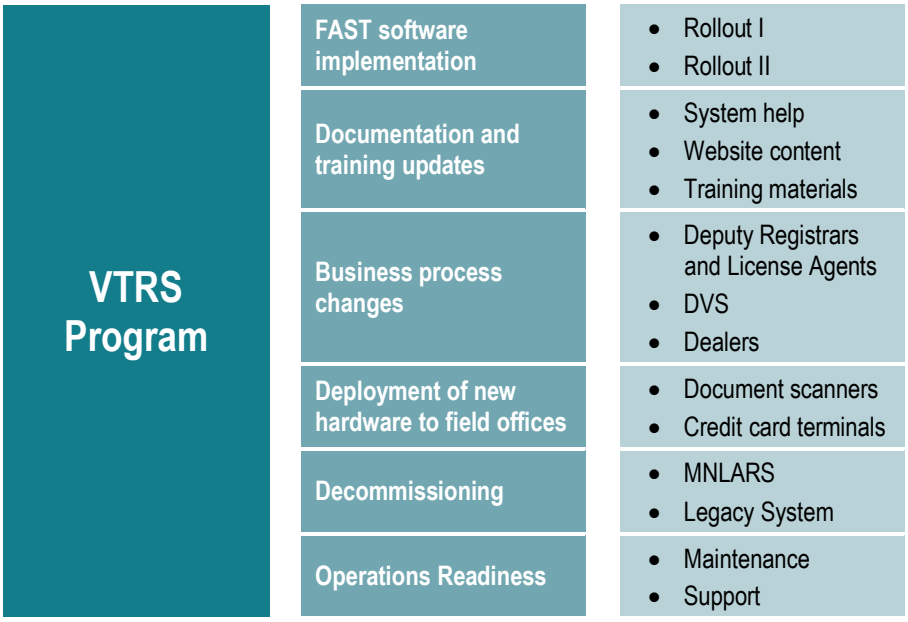
[9] *Laws of Minnesota* 2019, First Special Session, chapter 3, art. 2, sec. 35.

[10] *Ibid.*, art. 1, sec. 4, subd. 4(c).

[11] *Ibid.*, art. 2, sec. 34.

[12] *Ibid.*, art. 2, sec. 32.

Exhibit 2: Projects Related to the VTRS Program



SOURCE: Office of the Legislative Auditor.

In accordance with the law, we designed our audit to answer the following questions:

- Was the VTRS system fully implemented within the timeline and budget specified by the Legislature?
- Were MNLARS and the remaining legacy systems decommissioned within the timeline and budget specified by the Legislature and according to vendor contract?
- What risks and concerns exist related to the ongoing maintenance and support of VTRS?
- What factors and management actions contributed to the overall success of the VTRS program?
- What best practices and opportunities for improvement emerged from the VTRS program?

To answer these questions, OLA interviewed staff from DPS, MNIT, FAST, and deputy registrar offices. We also interviewed a member of the Legislative Driver and Vehicle Systems Oversight Committee and the chair of the Governor's Blue Ribbon Council on Information Technology. OLA examined expenditure data provided by DPS and from the statewide accounting system. We tested known legacy system servers and data stores to verify decommissioning, reviewed project and program documentation, attended internal DPS and stakeholder meetings, and surveyed system users. Finally, we utilized best practice criteria from the American Association of Motor Vehicle

Administrators (AAMVA), Information Systems Audit and Control Association's (ISACA's) Control Objectives for Information and Related Technologies Framework (COBIT Framework), National Institute of Standards and Technology (NIST), Project Management Institute (PMI), Technology Business Management Council, and United States Government Accountability Office, while also relying on applicable federal regulations, Minnesota state laws, and agency policies and standards.

We conducted this performance audit in accordance with generally accepted government auditing standards.[13] Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

[13] Comptroller General of the United States, Government Accountability Office, *Government Auditing Standards* (Washington, DC, December 2018).

VTRS Program Review

Project Timeline

DPS, MNIT, and FAST implemented VTRS within the timeline specified in law.

> The legislature intends that the contract with the vendor to implement VTRS will be completed and implementation will begin in early summer of 2019. The legislature further intends that VTRS will be launched by the end of calendar year 2020. The legislature further intends that VTRS will be fully implemented and MNLARS and the legacy system be fully decommissioned by the fall of 2021.
>
> **— *Laws of Minnesota* 2019, First Special Session, chapter 3, art. 2, sec. 35, subd. 7**

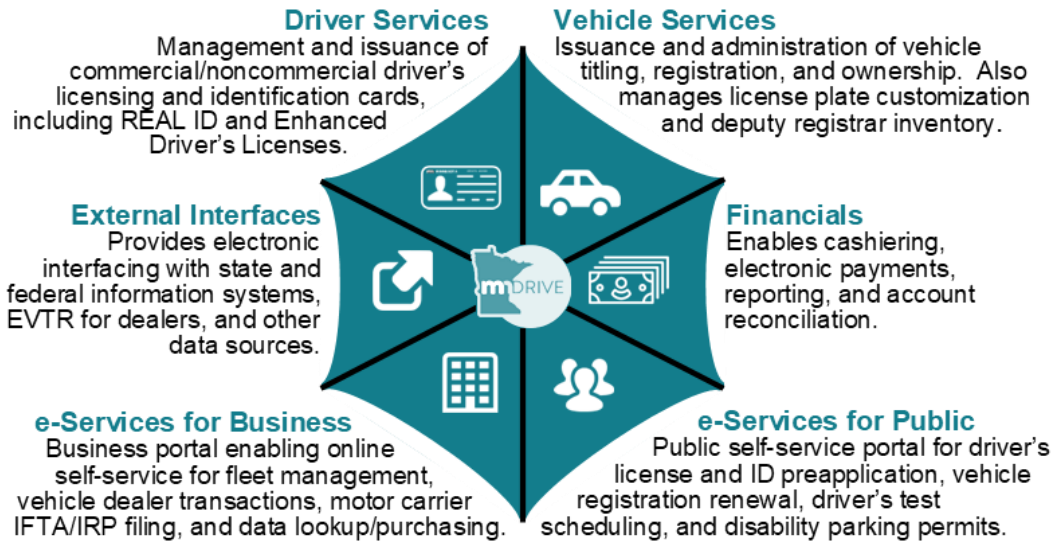
DPS, MNIT, and FAST completed the first major release of VTRS, Rollout I, on November 16, 2020. This first milestone included functionality that fully replaced all vehicle services provided by MNLARS and updated the existing FAST driver services functionality to the latest software version, combining the driver and vehicle systems into a singular system known as MNDRIVE. Rollout I also included motor vehicle dealer functions, requiring dealers to enter registration and title information through a secure online portal and print a temporary license plate. Motor vehicle dealer functionality also included Electronic Vehicle Titling and Registration (EVTR), which allowed dealers to use their existing information systems to interface electronically with the state's system—further eliminating the need for dual, data entry.

DPS, MNIT, and FAST completed the second major release of VTRS, Rollout II, on October 4, 2021. Rollout II integrated International Fuel Tax Agreement (IFTA) and International Registration Plan (IRP) functions for the trucking industry, commonly referred to as Prorate, into the vehicle services portion of the VTRS system. After Rollout II, motor carriers completed their quarterly IFTA reports for the third and fourth quarters of 2021 within the new VTRS functionality, and carriers used the new system to complete their annual IRP registration renewals beginning in January 2022.

In accordance with the definition in law, "full implementation" means all packaged software solution components are implemented and functioning, and all MNLARS and legacy components are decommissioned.[14] As part of our review, we validated that all the packaged software components were implemented and that the contracted functional requirements had been met. As depicted in Exhibit 3, the MNDRIVE system now contains numerous modules and components.

[14] *Laws of Minnesota* 2019, First Special Session, chapter 3, art. 2, sec. 32, subd. 1.

Exhibit 3: MNDRIVE Functions



SOURCE: Office of the Legislative Auditor.

While all available FAST software components were implemented, the software contains some functionality beyond the scope of the implementation that was purposely not used and not enabled. For example, during the first rollout, the development team specifically disabled the ability to register all-terrain vehicles (ATVs). This was done to prevent confusion, as ATVs were outside of the scope of DPS and the overall implementation project. The Department of Natural Resources (DNR) has its own, separate system that deputy registrars use to register and track ATVs, snowmobiles, and boats. A recent independent review of MNDRIVE, as mandated by the Legislature, recommended that DNR consider the functionality of MNDRIVE as it looks to modernize its system for ATV, snowmobile, and boat registrations.[15] We concur with this recommendation.

MNIT decommissioned MNLARS and most of the legacy systems by March 2021.

The 2019 Legislature directed DPS and MNIT to fully implement VTRS and fully decommission MNLARS and the legacy systems by the fall of 2021.[16] DPS and MNIT generally complied with this timeline, given that most legacy systems and their respective components were decommissioned by March 2021.

The first VTRS rollout in November 2020 replaced MNLARS and most of DPS's legacy systems, such as the DVS dealer licensing system. At the time of rollout, MNIT placed

[15] *Laws of Minnesota* 2021, First Special Session, chapter 5, art. 4, sec. 144; and Rick King, Amy Albus, Jenni Hein, and Theresa Wise, *Driver and Vehicle Services: Report of the Independent Expert Review* (January 12, 2022), https://www.senate.mn/committees/2021-2022/3102_Committee_on_Transportation_Finance_and_Policy/IER%20Final%20Report%20-%20Jan%2012%202022.pdf, accessed March 1, 2022.

[16] *Laws of Minnesota* 2019, First Special Session, chapter 3, art. 2, sec. 35, subd. 7.

these systems in a read-only mode, which allowed DPS stakeholders to access data within MNLARS and the legacy systems for verification purposes. After an approximate three-month read-only period, MNIT decommissioned the systems in March 2021.

We identified approximately 450 MNLARS and legacy system servers and workstations that had previously been used to support the systems. These included various file servers, database servers, web servers, servers supporting enabling services and tools, test servers, and software developer workstations. We validated that these system components were no longer present on DPS's network. However, our testing identified a small number of legacy servers and workstations that were still online and not decommissioned. Upon follow-up, we determined that these computer servers and workstations rightfully should not be decommissioned, as they support shared infrastructure or provide ongoing functions necessary for MNDRIVE and other internal applications and tools. Our testing also reviewed the MNIT mainframe systems. We validated that the legacy mainframe system components and data had been appropriately decommissioned.

MNIT provided OLA with disposition documentation showing data removal and sanitization from server hard drives and that any unneeded server hardware—in accordance with state practices—had been approved by the Minnesota Department of Administration for recycling or scrap.[17]

DPS's vendor for its legacy Prorate system decommissioned the system in February 2022.

Rollout II of VTRS provided functions allowing motor carriers to submit quarterly IFTA filings and IRP registrations, commonly referred to as Prorate. Previously, these functions had been provided through a vendor-hosted system. With IFTA and IRP functionality being converted into VTRS during the second rollout in October 2021, the legacy vendor-hosted system was no longer needed for processing new transactions. However, following best practices for a system conversion, DPS extended its contract with the vendor to allow the system to remain online in a read-only mode through the end of December 2021.

Despite the contract expiring on December 31, 2021, the legacy Prorate system remained online until January 25, 2022. Although motor carriers should have been using VTRS since October 2021, the ongoing availability of the legacy Prorate system into calendar year 2022 could have created some stakeholder confusion. DPS's contract with the vendor stipulated the state's data would be erased no less than 30 days and no more than 60 days following the expiration of the contract. The vendor provided evidence of erasure of the system database and all backups to DPS on February 7, 2022, demonstrating that the legacy Prorate system had been decommissioned.

The delay in decommissioning the legacy vendor-hosted IFTA and IRP systems technically did not meet the expectations of the Legislature of fully decommissioning

[17] Minnesota Information Technology Services, *Physical and Environmental Security Standard,* Control Number 7, version 1.5, approved November 1, 2021; and Department of Administration, *Property Management Reporting and Accountability Policy*, issued May 1, 2014.

the legacy systems by fall of 2021. OLA raised this as a potential risk in our first VTRS quarterly report and again raised this risk in the March 2020 quarterly report.[18] By June 2020, DPS and MNIT had improved the decommissioning plans, with tasks and a timeline to complete the decommissioning of the IFTA and IRP systems by the end of December 2021. However, the decommissioning efforts did not go as originally planned.

Throughout the VTRS project, decommissioning work was generally handled by MNIT using a project management toolset that was separate from the rest of the VTRS project work. However, the decommissioning efforts of the vendor-hosted IFTA and IRP systems were mostly a DPS responsibility, and little guidance existed to identify the steps necessary to decommission a vendor-hosted system.

MNIT lacks detailed enterprise-wide system development lifecycle policies and standards.

During the project, there were numerous times when MNIT staff could not clearly articulate necessary requirements, tasks, or steps associated with certain project activities, most notably regarding data cleansing and migration, system testing, and decommissioning of the systems. Staff knew that these activities were part of the related projects and they explained basic expectations; however, they could not point us towards authoritative documents, such as system development lifecycle policies, that MNIT management had put in place to ensure consistency in the processes.

System development lifecycle policies and standards documents provide business program managers, business project managers, technical project managers, and other program and project stakeholders guidance and implementation standards for system development. These documents should serve as a collection of resources designed to support the approval, planning, and lifecycle development of information systems. When properly written, the policies, standards, procedures, and guidelines articulate whether certain tasks or artifacts are required or merely recommended. For example, a full system modernization program, like VTRS, may be required to incorporate all system testing methods, while a minor fix or enhancement may only require a unit test and user acceptance testing. Absent MNIT management direction, project teams across the executive branch are left to decide what is or is not required. In some instances, contracted vendors make these decisions. As a result, the executive branch has inconsistent controls over systems development.

Testing standards, for example, should articulate *what* testing or reporting may be required, while the procedures and guidelines would provide greater details on *how* to perform the tests. Testing standards should address the following types of tests:

- Accessibility Test: Ensures compliance with accessibility policies and standards.
- Data Conversion Test: Ensures the accurate migration of appropriate legacy data.

[18] See "Risk 4" of Office of the Legislative Auditor, Financial Audit Division, *Minnesota Vehicle Title and Registration System – March 2020 Quarterly Review*, 10, https://www.auditor.leg.state.mn.us/fad/pdf/fad20-03.pdf.

- Interface Test: Ensures proper functioning with all companion applications.
- Operating Platform Test: Ensures proper functioning of the application across all combinations of relevant hardware and software components.
- Performance Test: Ensures responsiveness under projected average and peak processing loads.
- Restoration Test: Ensures full functioning of the application following an infrastructure rollback/restoration.
- Regression Test: Applies exclusively to modifications of existing applications. Ensures that the new version does not compromise existing functionality.
- Security Test: Ensures the confidentiality, integrity, and availability of the application.
- Unit Test: Ensures that individual units of code function on their own.
- Use Case Test: Ensures proper functioning of all features of the application.
- User Acceptance Test: Ensures the application performs at an acceptable level for the business and customers before being released for general use.

Guidance should also address how defects discovered during testing are logged into a tracking tool, categorized and prioritized, and sent to development to be fixed.

Decommissioning standards should define expectations for such things as what to include within a decommissioning plan; expected retention of data in a read-only mode; data and source code archival; software license management; and hardware removal, reuse, or destruction. The standards and procedures should also address what steps are expected for applications and systems that are hosted by vendors.

MNIT, with a newly created "Modernization Playbook," has taken steps to define high-level phases and activities for a system development project.[19] However, MNIT still lacks a variety of related policies, standards, detailed procedures, and guidelines.

RECOMMENDATION

MNIT should develop formal system development lifecycle (SDLC) policies, standards, procedures, and guidelines.

[19] Minnesota IT Services, *Modernization Playbook*, https://mn.gov/modernization/, accessed April 4, 2022.

Project Oversight

MNIT and DPS did not adequately track some aspects of the VTRS program.

A project represents a single, focused endeavor; a program is a collection of projects. The different projects complement each other to assist the program in achieving its overall objectives.

The VTRS implementation was much more than a technical software project. VTRS, and similar large IT implementations, consist of multiple subprojects that expand beyond the realm of the IT system itself. For example, VTRS included numerous business process changes, documentation and training updates for various stakeholder groups, website updates for the public, deployment of new scanners to deputy registrars, new credit card terminal machines, a review of self-service options, contract management for external technical vendors, legacy system decommissioning, and more. Combined, these comprise an overall change program. As we reviewed the VTRS implementation, we noted that many of these subprojects appeared to be tracked and managed separately, without a high degree of coordination between them.

FAST tracked and managed VTRS-specific work within its own tracking system. MNIT tracked its projects within its own project management tool, while DPS tracked its projects in spreadsheets. While it may not be possible to track each project effort within a single project management tool or methodology, the implementation of the overall program and all of its components must be well-coordinated to ensure that no pieces are overlooked. We noted that some items, such as documentation updates and decommissioning of the legacy Prorate system, seemed left out or even forgotten within the context of the overall program delivery, perhaps contributing to their delayed completion.

A broad program management plan, including identifying the interconnection, dependencies, timing, and relationships between all projects supporting the overall program, should be developed at the start of a project and updated periodically throughout its lifespan. Furthermore, a program director should be assigned responsibility for the overall coordination of the program management plan.

RECOMMENDATION

MNIT and state agencies should ensure that all components related to a systems development project are managed and tracked both individually and as part of an overall larger program.

System Documentation

As part of any major system implementation, the related documentation and web-based content for stakeholders and the public should be updated to remove obsolete content and references and provide information about the new system. In our December 2020 and June 2021 quarterly reports, we noted a risk that some DPS website pages had not been timely updated and contained outdated information, potentially leading to stakeholder confusion.

DPS has taken steps to update and improve MNDRIVE documentation for stakeholders.

Following our quarterly reviews, DPS began a project to "review and update all procedure information related to driver's license, ID card, and vehicle title and registration transactions," with the goal to "create and maintain one source of truth for DVS procedure information" within the MNDRIVE help and documentation functions.[20] DPS completed this project in February 2022 and had several driver's license agents and deputy registrar staff review the updated documentation to ensure that it met the needs of the end users.

We recognize DPS's latest efforts, but maintain that DPS should have updated its websites and system documentation as part of the VTRS rollouts. Although some content was updated during the rollouts, certain websites and reference materials were overlooked.

Software implementation projects like VTRS require more than just technical staff. In our interviews with project leadership, we identified a shared desire for improved planning for both project and nonproject staffing within the agency during the lifespan of the project. DVS leaders commented that VTRS consumed staffing resources from all areas of DVS, in some cases either leaving a staffing gap within service operations or requiring staff members to complete both operational and project tasks.

MNIT and DPS underestimated resources needed for project tasks and ongoing operational support.

Although the VTRS project team prepared a staffing resource plan, DPS managers noted that, in hindsight, they had underestimated the amount of DVS resources needed for the testing, training, and postimplementation support of MNDRIVE. Temporary staff were a vital addition to ensure that day-to-day transaction processing operations were carried out, while permanent staff focused on project activities, such as testing and training. DPS further noted that it had underestimated the project commitments required of legal, data practices, and communication staff.

[20] "Transition Procedure Information from Info Hub to MNDRIVE Help Manager" (Project Plan, Minnesota Department of Public Safety, St. Paul, August 13, 2021), 1.

It is a challenge for any modernization effort to ensure that the right resources are in place and that day-to-day operations continue while modernization occurs. The need to have the right staff committed to the project along with appropriate backfilled staff is essential. Having the right skill sets in place at the right time enables an agency to complete work in a quality and timely manner.

As part of project planning, an agency should conduct a staffing analysis to determine which staff will need to participate in the project and for what duration. The analysis should also include an assessment of the overall impact that the project has on ongoing operations. Based on the impact, the agency can then determine how to maintain ongoing operations and minimize potential impact to stakeholders.

During a project, MNIT and the agency should track time spent in each project area. These detailed time reports can be compared to budgets and will help to estimate staffing needs for future projects. While MNIT does track some hours applied during a project, it often excludes hours applied by business staff.

RECOMMENDATIONS

- **MNIT and state agencies should develop business and technical staffing plans prior to beginning a project to ensure adequate coverage both for the project and for ongoing operations.**
- **MNIT and state agencies should utilize time tracking tools that allow for a comparison of budgeted project hours to actual applied hours.**

Independent Project Audits

Minnesota statutes require an outside entity to conduct a risk assessment and prepare a mitigation plan for all IT projects estimated to cost more than $5 million.[21] Additionally, technology projects with an expected cost over $10 million require the agency to perform or contract an annual independent audit.[22] Often, these audits are referred to as an Independent Verification and Validation (IV&V) assessment.

DPS and MNIT contracted with a well-known external accounting, assurance, and consulting firm to conduct the required risk assessment and independent audits, per statutes. Overall, the vendor's VTRS IV&V assessment provided DPS, MNIT, and OLA with additional independent assurance that the project was on track with only minor risks. However, guidance from MNIT defining processes and outlining the expected deliverables and scope of the assessments would have been beneficial.

[21] *Minnesota Statutes* 2021, 16E.04, subd. 3.

[22] *Minnesota Statutes* 2021, 16E.01, subd. 3.

MNIT has not developed principles to be used during independent audits of state software development projects.

A 2019 OLA program evaluation found that MNIT has not developed standards to be used during independent audits of state software development projects.[23] As discussed in the OLA program evaluation, without standards or principles from MNIT, these IV&V assessments may not review or address issues that could prevent project failures. As of February 2022, MNIT had not yet developed standards, procedures, or guidelines for project teams to use. On the other hand, MNIT has established a master contract to streamline the process agencies follow to procure vendors for IT projects' audits, risk assessments, and technical reviews.

RECOMMENDATION

MNIT should develop standard criteria, guidance, and requirements for use during independent audits of state system development projects.

Stakeholder User Experience and Satisfaction

The law defined the VTRS system as being fully implemented when the system components were functioning. To assess the *functioning* concept, we considered if there were any pervasive issues with the system, what improvements the end users and stakeholders were requesting, and the overall satisfaction of the system by the end users and stakeholders.

In January 2022, we invited the nearly 15,000 users of MNDRIVE and e-Services for Business to participate in a survey to learn about users' experiences and satisfaction with the new system.[24] We received responses from 2,561 individuals, representing a total response rate of approximately 18 percent.

Broadly, participants represented internal DVS staff, deputy registrars and driver's license agents, motor vehicle dealers, motor carriers, fleet managers, and various other users. Survey respondents were asked to select the extent to which they agreed or disagreed with statements regarding training, system errors, business processes, changes in workload, communication, and overall satisfaction.

We summarize some of the survey responses below. Full survey results are in Appendix D.

[23] Office of the Legislative Auditor, Program Evaluation Division, *Office of Minnesota Information Technology Services (MNIT)*, 72, https://www.auditor.leg.state.mn.us/ped/pedrep/mnitservices.pdf.

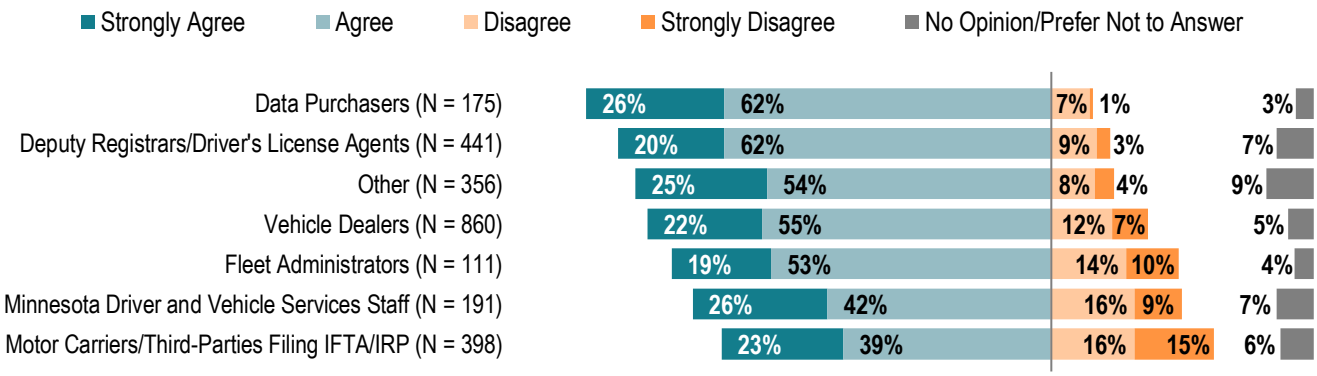
[24] MNDRIVE contains two web-based portals (e-Services for Business and e-Services for Public) that allow businesses and citizens to interact with the system. The e-Services for Business portal enables online self-service for fleet management, vehicle dealer transactions, motor carrier IFTA/IRP filing, and data lookup/purchasing. The e-Services for Public portal allows citizens self-service options for driver's license and ID preapplication, vehicle registration renewal, driver's test scheduling, and disability parking permits.

Based on responses to our survey, MNDRIVE users are generally satisfied with the system. However, motor carriers and deputy registrars providing IFTA and IRP services encountered issues with obtaining access and the support they needed with the new system.

Survey results showed that, overall, most stakeholders were satisfied with MNDRIVE and the e-Services for Business components. A high percentage of satisfaction, particularly among respondents who identified as deputy registrars and driver's license agents (82 percent) and vehicle dealers (77 percent), revealed clear success for the project. However, survey results showed somewhat lower satisfaction levels among motor carriers; 62 percent of respondents who identified as motor carriers (or those filing IFTA/IRP on behalf of carriers) responded that they agreed or strongly agreed with the overall satisfaction statement. Exhibit 4 shows satisfaction levels among each stakeholder group.

Exhibit 4: Overall Stakeholder Satisfaction with MNDRIVE/VTRS

Survey Statement: Overall, I am satisfied with MNDRIVE/e-Services for Business.



NOTES: Survey respondents self-identified their business type based on a predefined list. Respondents selecting "Other" represent users from the system's broad user community, including users from the court system, the Minnesota Department of Human Services, and the Minnesota Department of Transportation. Percentages may not sum to 100 due to rounding.

SOURCE: Office of the Legislative Auditor.

This disparity among the primary stakeholder groups may be explained by various factors:

- Deputy registrars' and vehicle dealers' satisfaction with VTRS is in comparison to MNLARS, which had numerous well-publicized issues. In contrast, the legacy Prorate (IFTA/IRP) system was functional and relatively issue free.

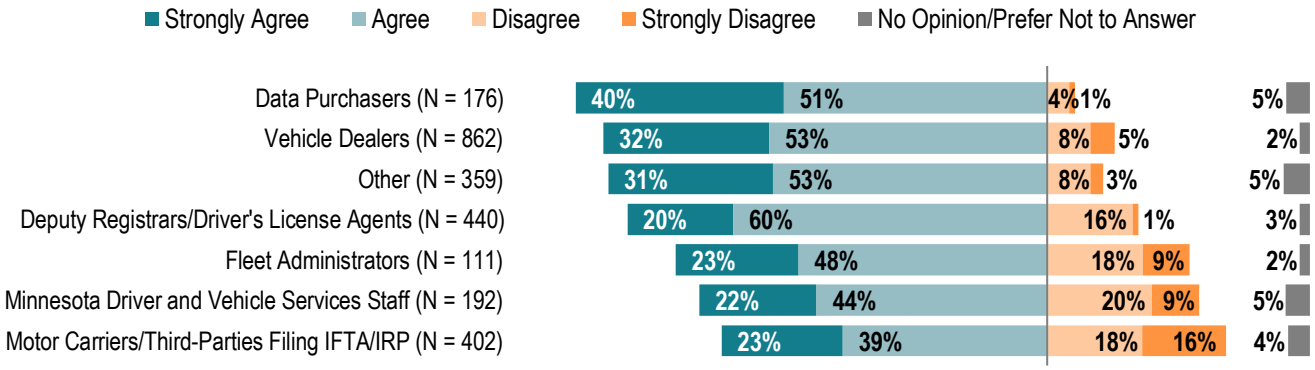
- Deputy registrars/driver's license agents and vehicle dealers have had more time using the new system since its original launch in November 2020. Not only has this likely improved their familiarity and competency within the system, DPS

and FAST have also made numerous improvements to the system based on feedback from users. Motor carriers, conversely, have had relatively little time and opportunity to gain familiarity with the system, and DPS and FAST have had less time to implement enhancements based on user feedback.

Survey respondents generally agreed or strongly agreed with the statement that they could complete their work within MNDRIVE/e-Services for Business without experiencing errors. Responses from vehicle dealers (85 percent agreed or strongly agreed) and deputy registrars/driver's license agents (80 percent agreed or strongly agreed) show high levels of positive user experience. In contrast, less than two-thirds (62 percent) of motor carriers agreed with this statement. Exhibit 5 shows stakeholder response levels regarding their experiences using the new system without errors or problems.

Exhibit 5: User Experience with MNDRIVE/VTRS

Survey Statement: I am able to complete my work within MNDRIVE/e-Services for Business without experiencing errors.



NOTES: Survey respondents self-identified their business type based on a predefined list. Respondents selecting "Other" represent users from the system's broad user community, including users from the court system, the Minnesota Department of Human Services, and the Minnesota Department of Transportation. Percentages may not sum to 100 due to rounding.

SOURCE: Office of the Legislative Auditor.

In comparison to other stakeholder groups, motor carriers showed lower levels of agreement in response to other survey questions as well. For example, only 54 percent of motor carrier respondents stated that they agreed or strongly agreed that the training they received had successfully prepared them to use the new system. Additionally, just 55 percent of motor carrier respondents agreed or strongly agreed that the new system had improved their business processes. We heard from both motor carriers and deputy registrars providing IFTA and IRP services that users were having trouble getting the support they needed with the new system, citing long waits for e-mail and phone support.

DPS told us they are aware of the issues with motor carriers obtaining support and are working with IFTA and IRP deputies to put new processes in place. DPS shared plans with us to create an "enhanced" user role for certain deputy registrars, giving them the authority to resolve motor carrier issues without requiring assistance from the centralized DPS Prorate unit.

Because motor carriers access the MNDRIVE e-Services for Business system infrequently (typically to file quarterly IFTA statements), each time they visit the system they may need to relearn how to use it. We recommend that DPS review its training resources for motor carriers and develop self-service and on-demand training resources to be available to users as needed.

RECOMMENDATIONS

- **DPS should continue to work with key deputy registrars to enhance service offerings for motor carriers.**
- **DPS should review its training and communications for motor carriers and ensure that self-service and on-demand training resources are available.**

Workload and Accessibility

Most MNDRIVE users believe that the system has not decreased their workload.

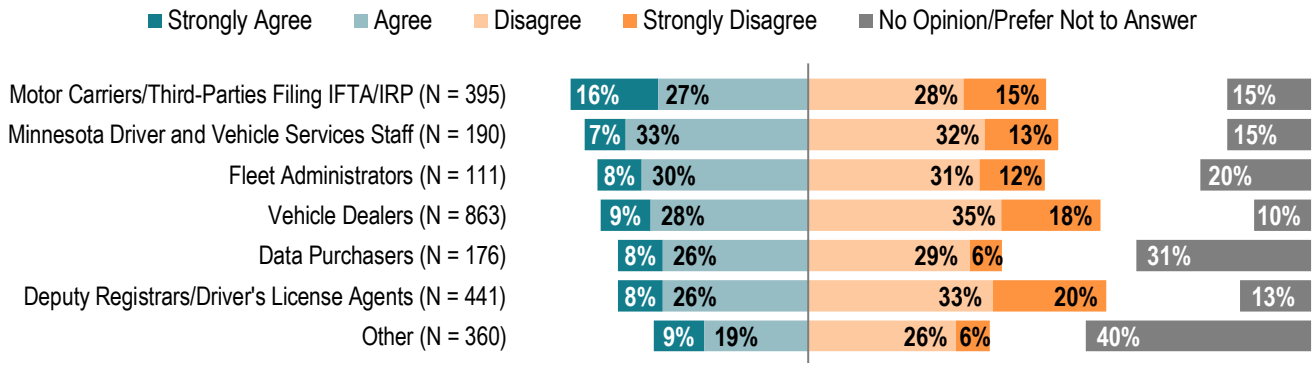
Across all stakeholder groups, less than 50 percent of respondents agreed or strongly agreed that MNDRIVE and e-Services for Business had decreased their workload. While some of this response may be due to the learning curve in transitioning to a new system, it may also be indicative of having more processes at the front end of the system. Exhibit 6 shows stakeholder survey responses regarding workload.

The latest MNDRIVE report, published January 2022, offers a variety of recommendations regarding stakeholder workload.[25] We encourage DPS and the Legislature to consider these recommendations.

[25] King et al., *Driver and Vehicle Services: Report of the Independent Expert Review*.

Exhibit 6: Users' Opinions of MNDRIVE's Effect on Workload

Survey Statement: MNDRIVE/e-Services for Business has decreased my workload.



NOTES: Survey respondents self-identified their business type based on a predefined list. Respondents selecting "Other" represent users from the system's broad user community, including users from the court system, the Minnesota Department of Human Services, and the Minnesota Department of Transportation. Percentages may not sum to 100 due to rounding.

SOURCE: Office of the Legislative Auditor.

MNIT and DPS did not ensure that the self-service functionality of VTRS met accessibility requirements.

Minnesota statutes require MNIT to develop accessibility standards for technology and ensure that state agencies adhere to them, or apply for an exception.[26] We noted in our September 2020 Quarterly Review that the project had not taken formal steps to perform testing to identify accessibility issues or to provide evidence that the system met state accessibility standards.[27] In September 2021, DPS and MNIT contracted with a third-party accessibility evaluator to complete a high-level assessment of a selection of MNDRIVE's public-facing self-service functions against the World Wide Web Consortium's Web Content Accessibility Guidelines.[28]

The evaluator found some issues that may cause frustration or difficulties when people with disabilities utilize VTRS's self-service functions, yet described the VTRS components that they tested as "pretty accessible" and "on-par with a first-review of transactional public-facing government sites."[29] However, VTRS had been live for

[26] *Minnesota Statutes* 2021, 16E.03, subd. 9.

[27] Office of the Legislative Auditor, Financial Audit Division, *Minnesota Vehicle Title and Registration System – September 2020 Quarterly Review*, 12, https://www.auditor.leg.state.mn.us/fad/pdf/fad20-09.pdf.

[28] Web Content Accessibility Guidelines (WCAG) are developed through the W3C process in cooperation with individuals and organizations around the world, with a goal of providing a single shared standard for web content accessibility that meets the needs of individuals, organizations, and governments internationally. See https://www.w3.org/WAI/standards-guidelines/wcag/.

[29] Cory Lebson, Lebsontech LLC User Experience Consulting, e-mail message to Joe Sass, "State of Minnesota Driver/Vehicle Services High-Level Accessibility Review," October 4, 2021.

approximately 10 months by the time this accessibility assessment occurred. Furthermore, the evaluator was able to complete its assessment without significant time commitments, utilizing a toolset largely consisting of free web browser extensions. If MNIT had tested accessibility earlier, these issues may have been identified and resolved prior to the system's launch. Moreover, correcting these issues now may be more costly as they may require redevelopment and testing.

RECOMMENDATIONS

- **DPS and MNIT should continue efforts to resolve accessibility deficiencies.**
- **MNIT should develop accessibility testing guidelines, practices, and training to include within its projects.**
- **MNIT should require IT systems to undergo an accessibility assessment or review prior to releasing a system.**

Budget and Expenditure Verification

DPS is projected to end Fiscal Year 2022 with approximately $5.9 million remaining in the VTRS project appropriation.

The Legislature appropriated approximately $52.67 million to fund the development and implementation of VTRS. This funding was available until June 30, 2022.[30]

As of January 31, 2022, DPS had spent approximately $45.89 million. Based on agency budget documents, DPS had an additional $846,000 in remaining project costs before the end of the fiscal year. These expected expenses cover delayed billing for MNIT staffing and technology costs, remaining contractor expenses, and DPS staff.

Based upon these current and budgeted Fiscal Year 2022 project expenditures, Exhibit 7 shows that approximately $5.9 million will remain in the VTRS project appropriation at the end of the fiscal year. DPS reserved $4.4 million as a project contingency—funds set aside for any unexpected project costs—and the project ultimately cost $1.5 million less than budgeted.[31] The remaining VTRS project funds are expected to be returned to the state's General Fund at the end of Fiscal Year 2022.[32]

[30] *Laws of Minnesota* 2019, First Special Session, chapter 3, art. 1, sec. 4, subd. 4(c).

[31] The establishment of a contingency fund for future business needs, legislative additions, other changes, and unexpected requests that may arise is considered a best practice. We discuss this further on page 37.

[32] In accordance with the state's accounting practices, agencies have until August 19, 2022, to finalize Fiscal Year 2022 closing tasks.

Exhibit 7: Project Spending and Budget

Fiscal Year 2020 Total Actual Expenditures	$20,696,672.10
+ Fiscal Year 2021 Total Actual Expenditures	21,273,513.20
+ Fiscal Year 2022 Expenditures as of January 31, 2022	3,920,666.90
+ Fiscal Year 2022 Additional Budgeted Expenditures	846,333.10
Total Estimated Project Cost:	**$46,737,185.30**
Total Project Appropriation	$52,669,000.00
- Total Estimated Project Cost (from above)	46,737,185.30
Total Estimated Remaining Balance as of June 30, 2022	**$ 5,931,814.70**

SOURCE: Office of the Legislative Auditor, analysis of DPS project budget and expenditure data.

Exhibit 8 shows the original budget, as of May 2019, compared to the total expenditures, as of January 31, 2022. While the agency closely estimated its obligations for FAST, its budgets for staffing, additional contractors, technology, and other miscellaneous costs were not as precise. In particular, DPS spent significantly more than budgeted on DPS staff and miscellaneous costs, but less than budgeted on MNIT staff and technology costs. Inaccurate budget items, combined with multiple expense transfers into the VTRS project fund at the end of Fiscal Year 2021, indicate that an opportunity exists to improve IT project budgeting guidelines. These guidelines could assist state agencies to more accurately estimate costs on future IT projects.

DPS paid FAST approximately $34.7 million in total payments for project contract obligations, software licensing fees, and initial project-related system maintenance. These expenditures accounted for approximately 75 percent of total project expenditures and aligned with the original budgets.

Staffing costs for DPS comprised the next largest expenditure, totaling approximately $6.16 million. Originally, DPS had budgeted only $2.41 million for DPS personnel. However, DPS managers noted that they had underestimated the amount of DVS resources needed for the testing, training, and postimplementation support of MNDRIVE. Temporary staff, also underestimated by DPS, were vital to day-to-day transaction processing and operations, while permanent staff focused on project activities.

Technology costs and expenditures for MNIT staff remained relatively low. These technology costs were lower than originally budgeted due to FAST and MNIT utilizing servers and hosting infrastructure first implemented for the FAST driver system in 2018. Following VTRS Rollout I in 2020, MNIT and FAST added additional computing resources to the infrastructure to support the new functionality and the increased number of users. MNIT staffing costs were lower due to FAST providing more support functions than DPS originally estimated.

Exhibit 8: VTRS Project Budget and Expenditures (as of January 31, 2022)

Cost Category	May 2019 Budget[a]	Actual Expenditures (as of January 31, 2022)			
		Fiscal Year 2020	Fiscal Year 2021	Fiscal Year 2022	Total Expenditures
FAST	**$36,000,000.00**	**$18,440,000.00**	**$13,000,000.00**	**$3,262,950.00**	**$34,702,950.00**
MNIT Staff	**2,389,000.00**	**804,733.95**	**644,194.69**	**62,757.69**	**1,511,686.33**
DPS Staff	**2,413,000.00**	**733,549.58**	**5,031,130.13**	**395,880.03**	**6,160,559.74**
DVS SMEs		733,549.58	712,242.36	203,344.42	1,649,136.36
Other DVS Staff[b]		—	2,640,120.49	99,936.98	2,740,057.47
Temporary Staff[c]		—	1,678,767.28	92,598.63	1,771,365.91
Stakeholder SMEs		**225,247.43**	**170,034.50**	**15,176.86**	**410,458.79**
Deputy Registrars/Driver License Agents		200,524.43	98,677.04	—	299,201.47
Prorate Deputy Registrars		—	11,391.08	596.86	11,987.94
Dealers (Including Dealer Ambassadors)		24,723.00	50,286.38	—	75,009.38
Motor Carriers		—	9,680.00	14,580.00	24,260.00
Contractors/Consultants	**3,646,000.00**	**373,608.38**	**451,741.19**	**182,681.80**	**1,008,031.37**
Data Security		—	118,910.55	115,412.30	234,322.85
IV&V Audit		130,000.00	93,500.00	—	223,500.00
Technical Contractors		243,608.38	239,330.64	67,269.50	550,208.52
Technology Costs	**3,822,000.00**	**88,730.59**	**1,229,884.14**	**—**	**1,318,614.73**
Hardware/Hosting/Network		88,730.59	308,115.10	—	396,845.69
Desktop/Laptop[d]		—	52,096.10	—	52,096.10
Third-Party Development Expenses[e]		—	728,780.49	—	728,780.49
Deputy Registrar Scanners		—	140,892.45	—	140,892.45
Other/Miscellaneous		**30,802.17**	**746,528.55**	**1,220.52**	**778,551.24**
Training		28,944.67	18,760.21	1,220.52	48,925.40
Background Checks		247.50	222.11	—	469.61
Rent/Utilities		—	59,530.47	—	59,530.47
Miscellaneous Expenses		1,610.00	668,015.76	—	669,625.76
Contingency	**4,400,000.00**	**—**	**—**	**—**	**—**
Totals	**$52,670,000.00**	**$20,696,672.10**	**$21,273,513.20**	**$3,920,666.90**	**$45,890,852.20**

[a] The May 2019 budget represents initial estimated project expenses prior to finalizing the contract with FAST.

[b] "Other DVS Staff" includes deputy liaisons, user acceptance testers, and staff supporting the implementation.

[c] "Temporary Staff" were staff hired to process the backlog of title and prorate transactions, and assist within the call center.

[d] These expenses were equipment for project and temporary staff.

[e] These expenses were for third-party knowledge testing, authorized by *Laws of Minnesota* 2020, Second Special Session, chapter 2, sec.4.; and phone system integration.

SOURCE: Office of the Legislative Auditor, analysis of DPS project budget and expenditure data.

DPS spent approximately $410,000 for embedded stakeholder subject matter experts who assisted with defining system requirements, performing user acceptance tests, and serving as "dealer ambassadors" who provided training and support for the vehicle dealer community. DPS had not budgeted for these costs within its preliminary budget, but it added these anticipated expenses early in the project. Although DPS spent less than 1 percent of the overall project costs to compensate these subject matter experts for their time on the project, many believe that this was a significant contributing factor to the success of the project. We discuss this further within Contributing Factor 7, on page 39.

A project the size of VTRS requires more than just the technical implementation of software. DPS, for example, added temporary staff to assist with work in progress and leaned on its existing business staff in DVS to assist with testing, training, and system support. Budgeting for these direct and indirect costs is crucial for good fiscal management. Yet, prior to the close of Fiscal Year 2021, we observed multiple transfers of payroll and business expenses for DPS staff, and transfers of expenditures for office supplies, equipment, rent, and utilities being paid from the VTRS appropriation. Because DPS had not previously budgeted for these costs in the project budget, we initially questioned whether these were appropriate project costs. Discussions with project and agency fiscal staff validated that these expenses were related to project work, but the expenditures had not been predicted. DPS staff told us they had received little direction when developing the VTRS project budget as to what indirect costs should be expected for large IT implementation programs. We believe better guidance could help future projects.

MNIT does not provide agencies sufficient guidance for developing and managing IT project budgets.

With large IT projects, it is crucial for management and key stakeholders to understand the full extent of expenses associated with the project. Conveying that information to lawmakers and budget decision-makers can be especially challenging, particularly when more projects are shifting away from traditional capital outlays (i.e., purchasing IT hardware and software) to ongoing software-as-a-service models (i.e., leasing IT equipment and having vendors provide maintenance and support). Challenges include defining IT project costs, determining how the costs should be accounted for, and managing multiple government procurement processes.

In some cases, one agency may consider an indirect cost to be an agency administrative cost, while another may consider it an IT project cost. For example, one agency may consider the time and expenses of its agency commissioner to be an overall agency administration cost, while another agency might allocate a portion of time spent on a large IT project as a project cost. Not only do agencies need to justify that project expenses are appropriate for the project, they also need to ensure that they comply with

generally accepted accounting principles for computer system development costs by either recording the cost as an asset or as an operating expense.[33]

Although the Department of Management and Budget (MMB) provides a statewide policy on capitalizable costs for IT software development projects, overall budgeting and accounting guidance for large IT projects like the VTRS implementation are generally unavailable.[34] We recommend that MNIT, working with MMB as needed, develop guidance and recommendations for agencies when developing budgets for large or multiyear IT projects, including cost factors outside of traditional IT expenses, such as labor, administrative costs, and overhead. For example, these guidelines could assist with:

- Defining how to account for time spent by agency executives attending project status meetings.
- Defining average costs for common project expenses, such as accessibility testing or security penetration tests.
- Identifying allowable overhead or indirect costs.
- Calculating a project contingency amount.
- Establishing methodologies for estimating decommissioning costs.

While not a project cost, the guidelines could also provide directions on estimating and accounting for maintenance and support costs.[35]

RECOMMENDATION

MNIT, working with MMB as needed, should develop guidance and recommendations for agencies developing budgets for large or multiyear IT projects.

[33] Statement No. 51 of the Governmental Accounting Standards Board (GASB 51) allows for costs related to the application development stage of software creation to be capitalized. "Application Development Stage" includes: (a) the design of the development path, including the configuration and interfaces of the software, (b) coding, (c) installation to hardware, and (d) testing, including parallel processing. During this phase, internal and external costs to develop the internal-use software should be capitalized, along with costs to develop or obtain software used to access or convert old data by new systems. The costs of data conversion, however, should be expensed. Also, any training costs incurred during this stage should be expensed.

[34] The Department of Management and Budget, Statewide Operating Policies 0106-05, *Development-in-Progress Reporting* and 0106-07, *Intangibles – Including Internally Generated Computer Software & Easements Reporting*, both issued April 6, 2014. MNIT has minimal guidance for time tracking for IT projects.

[35] Several industry sources provide best practice guidance, including the Technology Business Management Council, *TBM Taxonomy: Version 4.0* (December 2020); ISACA, *COBIT 2019 Framework: Governance and Management Objectives* (2018); and the United States Government Accountability Office, *Cost Estimating and Assessment Guide: Best Practices for Developing and Managing Program Costs*, March 12, 2020.

System Maintenance and Support

Although fully implemented, the MNDRIVE system should not be considered complete; the IT system lifecycle must continue. DPS, MNIT, and FAST are now responsible for the ongoing maintenance and support of the system. This requires continually managing how the system can be enhanced and addressing changes in laws and/or business requirements. Agency leadership recognizes the need for managing this ongoing lifecycle and have already begun planning, developing, and testing new functionality and system enhancements. These activities inherently pose several operational risks; we discuss three of these risks in more detail below.

The first risk is for DPS and MNIT to manage the IT budget to available resources. For Fiscal Years 2022 and 2023, DPS has budgeted approximately $34 million—split between Vehicle Operations ($16.6 million) and Driver Operations ($17.4 million)—for the ongoing operations and maintenance of MNDRIVE. Payments to FAST over this two-year period are expected to be approximately $23 million. These costs can fluctuate based on the level and number of support resources contracted from FAST, such that costs could increase or decrease based on future system enhancements and support needs. Although DPS budgeted these expenses prior to recent world and economic events that have resulted in increased costs, the current funding for maintenance and support should remain adequate for the near future, resulting in a manageable risk.

DPS and MNIT intend to support these system maintenance and operations costs using a dedicated driver and vehicle services technology account funded by technology surcharges, certain fees, and money generated from the sale of driver and vehicle record data. These fees are set in law and are not automatically adjusted for inflation. Total revenue collections are based on total transactions. Barring a significant decrease in the number of driver or vehicle transactions, DPS estimates that these fees will collect approximately $40 million over a two-year period. At some future point, expenses most likely will exceed the revenue collected, at which time DPS will need to work with the Legislature to seek a fee increase or alternative sources of revenue.

A second current and future operational risk is related to an upcoming move of the VTRS infrastructure to a new data center. As discussed in our June 2021 Quarterly Report, DPS, MNIT, and FAST migrated MNDRIVE out of the state's data centers and into those owned by FAST.[36] While this improved the overall resiliency of the system, the agencies had long-term plans to move the system to the state's Enterprise Cloud Hosting solution. Work to migrate MNDRIVE from FAST's data center into MNIT's cloud-based infrastructure-as-a-service is already underway, with plans to complete the move during early summer of 2022. DPS, MNIT, and FAST will need to manage this risk to ensure that the migration causes little or no disruption to stakeholders. Given that the agencies and vendor had previously performed a migration with only minor issues, we believe that the risk for the upcoming move is also manageable.

[36] Office of the Legislative Auditor, Financial Audit Division, *Minnesota Vehicle Title and Registration System – June 2021 Quarterly Review*, 8, https://www.auditor.leg.state.mn.us/fad/pdf/fad21-04.pdf.

A third risk that DPS, MNIT, and FAST will need to manage is to ensure that the system remains up-to-date to meet strategic, technical, and legal requirements, and continues to meet stakeholder needs. DPS, MNIT, and FAST continue to perform incremental updates to MNDRIVE, adding additional enhancements, user interface improvements, and fixes based on prioritized requests from DPS and stakeholders. As a key part of system operations and maintenance, these incremental updates should continue throughout the life of the system. System upgrades are expected to follow FAST's release cycle, which can be relatively easily implemented due in part to the state having avoided customized coding throughout the project. In general, the risks associated with updates and enhancements are relatively low. However, we believe that some communications of system changes and DPS's future vision for the system could be improved.

DPS does not publish release notes that keep stakeholders informed of all system changes.

Since VTRS Rollout I, FAST has released new functionality, enhancements, and fixes regularly, often twice a week. While this allows the development team to be agile and responsive to stakeholder feedback and needs, it also means that the way a function works or a screen looks one day may not be the same the next day. We heard from some deputy registrars that they were not always aware when new enhancements, changes, or fixes had been added to MNDRIVE. One deputy registrar staff member described discovering these changes as "something you accidentally stumble upon."

While DPS has issued some system enhancement notifications as part of its weekly stakeholder e-mails, they are neither comprehensive nor representative of all system changes. Communicating system changes by e-mail provides limited usefulness, as e-mails do not provide a historical chronology of system changes over time. Similarly, these notifications typically do not include the release dates, and the notifications only go to the stakeholder group that is primarily affected. See an example in Exhibit 9 below.

Exhibit 9: System Enhancement Notification

MNDRIVE Update

A recent update to MNDRIVE gives users the option to enter a payer name when the customer pays by cash, credit card or a money order. Users were already able to enter a payer name for checks.

SOURCE: "DPS-DVS Weekly Update," February 3, 2022.

VTRS users told us it would be beneficial for stakeholders to be more aware of all changes taking place. Users should be able to find out what has changed systemwide, with the ability to focus on the changes most applicable to them.

Best practices dictate that a document describing details of specific changes—known as *release notes*—should accompany the launch of a new software product or software updates (e.g., recent changes, feature enhancements, or bug fixes).[37] A single set of release notes stored centrally, broken down by change type (e.g., "fix," "enhancement," or "new feature") and specifying users affected, would benefit all stakeholders.

In some cases, enhancements are tied to changes in business processes or other items that may require training. Deputy registrars have commented that DPS's monthly training sessions are helpful, but staff are not always able to attend them. Therefore, the release notes of changes should also include links to training content, allowing users to access training content as needed.

Compiling release notes, especially when deploying frequent changes, requires staff time and resources. Therefore, DPS, along with MNIT and FAST, should explore different processes to help streamline communication. The team should ensure that they share the information that is most beneficial to stakeholders, while being cautious to not include information in the release notes that could impact system security.

RECOMMENDATIONS

- **DPS should work with MNIT and FAST to communicate system changes regularly, as part of its stakeholder communications.**
- **DPS and MNIT should publish release notes for MNDRIVE.**

[37] Release notes benefit both the end users and development staff, often serving as a record of progress and showing how the system has changed over time.

OLA

VTRS Project Retrospective

OLA performed ongoing audit and project assurance activities throughout the duration of the VTRS project. As part of our audit work, we interviewed DPS and MNIT executive leadership, project leaders, and team members. Across these interviews, clear trends emerged, helping us to identify the factors that led to the success of the project. By providing this final project retrospective, we intend to highlight a few key factors and management actions that contributed to the overall success of the VTRS implementation project. We also identified some opportunities for improvement. Using the lessons learned, our recommendations may also benefit future IT system implementation or modernization projects.

There are many best practice elements that are necessary for a successful, large IT project. For this reason, in Appendix A, we have included an extensive list of best practices for a successful system modernization project. Although we recommend MNIT and state agencies incorporate into their IT projects the contributing factors and opportunities for improvement identified in this report, each IT project is different and there is no guarantee of success.

In response to recommendations within a 2019 OLA program evaluation for MNIT to develop better guidance for agencies undertaking software projects, MNIT recently has developed its *Modernization Playbook* for the state.[38] The Playbook was designed to help state agencies incorporate the modernization framework into new and existing business and project management processes. MNIT's plan is to make continual improvements to ensure that the Playbook is a practical resource for its users.

Factors That Contributed to Success

The 2017 failure of MNLARS and subsequent Office of the Legislative Auditor (OLA) reports, *Independent Expert Review of MNLARS*, and 2019 laws surrounding the VTRS implementation, made it clear from the beginning that a new system must be successful. Below, we outline eight contributing factors that we believe ultimately contributed to the successful implementation of VTRS.

Project Leadership and Project Staff

Following the recommendations of the *Independent Expert Review of MNLARS*, the law providing funding and outlining the requirements for VTRS defined DPS as the owner of the system and the entity responsible for the final decisions on functionality and priorities.[39] OLA's Special Review of MNLARS also recommended that top agency officials serve as project sponsors for large, high-risk software application projects. Ownership of the project enabled DPS to ensure that the VTRS system met the needs of

[38] Office of the Legislative Auditor, Program Evaluation Division, *Office of Minnesota Information Technology Services (MNIT)*, 73-77, https://www.auditor.leg.state.mn.us/ped/pedrep/mnitservices.pdf; and Minnesota IT Services, *Modernization Playbook*, https://mn.gov/modernization/, accessed April 4, 2022.

[39] *Laws of Minnesota* 2019, First Special Session, chapter 3, art. 2, sec. 35.

its Driver and Vehicle Services Division and the various stakeholder groups, with a focus on business requirements, services, processes, and DPS data.

Contributing Factor 1: Project ownership and a commitment to success were present from the highest levels of state and agency leadership down to individual project team members.

A consistent theme throughout the VTRS project was clear involvement of leadership and project sponsors at both DPS and MNIT. Project sponsors demonstrated their engagement through participation in stakeholder meetings, internal project meetings, and project leadership meetings, where they answered questions, addressed issues, and removed potential impediments as they emerged. Leadership further demonstrated a commitment to transparency throughout the project, making themselves, project staff, and requested system data readily available to stakeholders and OLA.

These top agency officials not only implemented OLA's recommendation to serve as project sponsors, but they also had sufficient authority and influence within their agencies to manage the execution of the project and make executive decisions when necessary. Our interviews showed that project teams regularly met with agency leadership and could escalate issues as necessary. Finally, DPS leadership further set the tone with key hires in DVS and established a dedicated business manager of the project, per best practices.[40]

Finally, the overall dedication of project staff—state employees, contractors, and subject matter experts—contributed to the success of implementing VTRS. Even during COVID-19 shutdowns and remote working, the team stayed committed to meeting deliverables.

Procurement and Contract Management

The most notable difference between the MNLARS and VTRS projects is the inclusion of Fast Enterprises, LLC and their commercial, off-the-shelf product, FastDS-VS (Driver System-Vehicle System).

The Legislature placed two procurement requirements into law:

1. The vendor must have successfully deployed the packaged vehicle software system in five or more states and must provide contacts for references from each state.

2. The vendor must have at least five years of implementation expertise in packaged vehicle software solutions.[41]

[40] ISACA, *COBIT 2019 Framework: Governance and Management Objectives* (2018) includes best practice recommendations for project sponsors and dedicated project managers with understanding of the technology and business.

[41] *Laws of Minnesota* 2019, First Special Session, chapter 3, art. 2, sec. 35, subd. 2.

These requirements ensured that the vendor selected for the VTRS project would have subject matter expertise in vehicle software solutions and a mature product already developed and ready to implement.

A key recommendation of the *Independent Expert Review of MNLARS* was to avoid customization of the selected packaged software solution, with an emphasis on adapting business processes to fit those of the software.[42] The 2019 Legislature enacted specific requirements for the project related to this recommendation, requiring DPS and MNIT to not only report the need for any customization to the Legislature, but also solicit input from stakeholders and review and approval of all customizations by the DPS Commissioner.[43] In the end, FAST and DPS were able to deliver a solution for Minnesota, with no customization of the underlying system.

Contributing Factor 2: DPS and MNIT purchased a mature, configurable, commercial, off-the-shelf platform with a proven implementation methodology.

In interviews with DPS leadership, we were told that FAST had proven itself as a reliable solution partner for Minnesota with the 2018 implementation of FAST Driver's System (FAST DS). The new driver's licensing solution implementation was successfully completed with few issues, while the state continued to work to stabilize MNLARS. During this time, FAST had demonstrated its ability to deliver under pressure and within a tight timeline.

As the VTRS program progressed and the new system was successfully implemented, it became more evident to OLA, MNIT, and DPS that FAST provided a reliable product. Given this public-private partnership, the system will likely remain viable and modern through regular maintenance updates, contracted enhancements to meet specific functional requirements, and reliable system support.

FAST's product, FastDS-VS, is a commercial, off-the-shelf product developed to be sold to and implemented in multiple jurisdictions. FAST implemented Version 12 of its software, allowing Minnesota to benefit from the maturity established through prior years of development, improvements, and fixes. Implementing a commercial, off-the-shelf system like FastDS-VS means that the basic application functions—registering/titling a vehicle, reports, a public-facing portal, system security, integration frameworks, and more—have already been developed and are functioning.

MNLARS Stabilization

Before VTRS was even procured, MNIT leaders and its system support staff worked to stabilize MNLARS and make it viable for the short term. A functional MNLARS meant that MNIT and DPS could focus on planning and then executing the VTRS project.

[42] King et al., *Independent Expert Review of MNLARS*, 19.

[43] *Laws of Minnesota* 2019, First Special Session, chapter 3, art. 2, secs. 34, subd. 5; and 35, subd. 6.

Contributing Factor 3: The Legislature put into law a requirement for DPS and MNIT to suspend development of MNLARS.

To help ensure success, the 2019 Legislature put a moratorium on changes to MNLARS, following the recommendation of the *Independent Expert Review of MNLARS*.[44] Changes to MNLARS would have meant additional time and money spent on development and business resources. Changes to MNLARS also would have required significant testing by subject matter experts, causing further staffing resource constraints and increasing the risk that a system defect could be introduced. The suspension of changes helped to ensure that MNLARS remained stable and viable until VTRS could be implemented. Furthermore, DPS subject matter experts could focus on working with FAST to define business requirements and build the new system, rather than focus on ensuring that MNLARS continued to meet business needs.

Role of MNIT Services

With the VTRS project, the role of MNIT fundamentally changed. Following the recommendations of the *Independent Expert Review of MNLARS,* the 2019 Legislature defined MNIT as the technical lead on the project, responsible for decisions regarding technology services and products, and technical staff (both internal and vendor technical staff).

Contributing Factor 4: MNIT fulfilled its role as a technical advisor to DPS.

With MNLARS stabilized, MNIT focused on providing the enabling services for VTRS. This included building and maintaining a secure infrastructure on which to host MNDRIVE. MNIT also provided security services, ensuring that the FAST platform and the FAST off-site hosting services met state security standards and maintained interoperability with the state infrastructure.

DPS's new Chief Business Technology Officer further improved the relationship between MNIT and DPS. The Chief Business Technology Officer and his staff provided necessary vendor management services between DPS, MNIT, and FAST. They also managed the relationships with external partners to ensure that the state's interests were represented, and their needs were being met.

Project Fiscal Management

IT projects must be planned and executed within the constraints of a budget. Proper fiscal management is essential to the success of the project, and project leaders must be well-versed in monitoring and controlling project costs. The VTRS project benefited from having a fiscal analyst dedicated to the project.

[44] *Laws of Minnesota* 2019, First Special Session, chapter 3, art. 2, sec. 35, subd. 4; and King et al., *Independent Expert Review of MNLARS*, 3.

Project Funding

In 2019, the Legislature provided DPS approximately $52.67 million in one-time funding to implement and develop VTRS. This appropriation expired June 30, 2022.

Contributing Factor 5: The Legislature provided the full project budget and gave DPS appropriate spending authority.

The Legislature provided DPS with the funding necessary to procure and fully implement VTRS at the start of Fiscal Year 2020. The Legislature attached very few restrictions to the funding, stating that it was for the "development and implementation of a packaged software system for vehicle registration and title transactions."[45] Through this appropriation, the Legislature largely followed the recommendations of the *Independent Expert Review of MNLARS* to not be overly prescriptive with funding restrictions.[46]

Fully funding the project from the start allowed DPS to actively manage the budget and put together a spending plan for the project. Moreover, DPS could use the funding where necessary, such as for onboarding temporary staff, managing VTRS integrations with areas such as the DVS call center, or hiring information security consultants when migrating the system to FAST's hosting environment. Finally, full project funding helped ensure that DPS had the budget to complete the VTRS project without returning to the Legislature to ask for additional funding—potentially risking the success of the project if the necessary funds were not made available.

When given appropriate spending authority, agencies must demonstrate fiscal stewardship, demonstrate success, be transparent, and build trust with the Legislature for future projects. DPS regularly reviewed expenditures and completed quarterly reports for the Legislature. The agency also prepared for audits and quickly responded to OLA inquiries.

Project Budgeting

DPS's budget showed an estimated $5.9 million in remaining VTRS project funds at the end of Fiscal Year 2022. Most of the remaining balance—$4.4 million—was reserved by DPS for a project contingency fund.

Contributing Factor 6: DPS reserved part of its appropriation as a contingency for future business needs, legislative additions, other changes, or unexpected requests that could have arisen.

Best practices established by the Project Management Institute and the United States General Accounting Office, among others, indicate that risk analysis should be used to

[45] *Laws of Minnesota* 2019, First Special Session, chapter 3, article 1, sec. 4, subd. 4(c).

[46] King et al., *Independent Expert Review of MNLARS*, 26.

determine a program's contingency funding.[47] These best practices suggest that all development programs should have contingency funding because it is unreasonable to expect a program not to encounter problems. Program managers need ready access to funding to resolve problems without adversely affecting programs (for example, by stretching the schedule). Decision-makers and budget analysts should understand that eliminating contingency funding limits program managers' ability to respond to program risks.

DPS followed best practices and reserved $4.4 million (approximately 8 percent of the total $52.7 million VTRS project appropriation) in project funds as a contingency, should an unexpected project need or expense arise. For example, these funds were available to allow the agency to quickly adapt to new risks, such as the impacts of COVID-19 shutdowns, which fortunately were never needed. Conversations with DPS showed that the agency had no intention of spending these reserved funds unless truly needed. When asked about the possibility of DPS utilizing the unused project funds for further enhancements of the system or other potential VTRS-related expenses, DPS stated that it believed returning the contingency reserves was the responsible action to take, and it would budget for these enhancements as an operation cost funded by operational funds.

Stakeholder Engagement

DPS serves a variety of stakeholder groups. Within these groups there are important differences. For example, small, independent vehicle dealers have different needs and capacities than large dealers that are part of a franchised chain. Stakeholders also include more than 170 deputy registrars, some of whom provide IFTA and IRP services; more than 7,200 independent, small, and large fleet motor carriers; and third-party compliance providers. Given the diversity of stakeholders, there may not be a single business process or solution that satisfies all stakeholders. To help ensure input of its wide array of stakeholders, DPS has taken steps to obtain feedback by including within the project subject matter experts from deputy registrars, the Minnesota Automobile Dealers Association, and the Minnesota Trucking Association.[48]

MNDRIVE Stakeholders

- Law enforcement agencies
- 3,500 motor vehicle dealers
- More than 170 deputy registrar and 120 driver's license agent offices
- 7,200 motor carriers
- Individual and bulk data purchasers
- 4.6 million driver's license and state ID holders
- 7.38 million registered vehicles and trailers

[47] *A Guide to the Project Management Body of Knowledge (PMBOK® Guide)*, Sixth Edition, Project Management Institute, 2017; and United States Government Accountability Office, *Cost Estimating and Assessment Guide: Best Practices for Developing and Managing Program Costs*, March 12, 2020.

[48] A subject matter expert is an individual with a deep understanding of a particular job, process, department, function, technology, machine, material, or type of equipment.

Contributing Factor 7: DPS improved communications with its stakeholders and embedded stakeholder representatives within the project as subject matter experts, testers, and ambassadors.

Throughout the project, DPS engaged key stakeholder groups in its system planning and governance processes. As part of this engagement, DPS worked with these stakeholder groups to ensure that they were aware of upcoming changes about VTRS and assisted in communicating any changes to other stakeholders. For example, DPS held informational meetings with various law enforcement group representatives to ensure that law enforcement officers statewide were aware of the upcoming changes to both temporary vehicle permits and the driver/vehicle information data. Also, DPS worked with the Minnesota Trucking Association to ensure that its members were aware of the MNDRIVE project and upcoming changes to their compliance filings for IFTA and IRP.

Working directly with various stakeholder groups, DPS made these groups part of the project itself to leverage existing communications channels from trusted sources (such as trade publications), and incorporate stakeholder subject matter experts and leaders into its MNDRIVE governance activities.

DPS's Driver and Vehicle Executive Steering Committee, composed of DPS leadership, project members, deputy registrars/driver's license agents, and various other stakeholder group representatives, met monthly to discuss project progress and potential issues. Additionally, working with the Minnesota Deputy Registrars Association and the Deputy Registrar Business Owners Association, DPS established a monthly workgroup to review and prioritize the changes, enhancements, and fixes that primarily affected deputy registrars. DPS similarly established communication channels to receive feedback and prioritize changes that affected other stakeholder groups, working with representatives from these groups.

A key differentiator in the VTRS implementation project was the inclusion of embedded subject matter experts in the project. These subject matter experts, as selected by their various governing boards and organizations, represented deputy registrars and driver's license agents (including both public and privately owned locations), vehicle dealers, motor carriers, and third-party carrier compliance companies. Leveraging decades of relevant experience in their respective area, these subject matter experts worked to develop system requirements, functional workflows, business processes, and training materials. They also served as key liaisons with their respective constituent groups, helping to communicate project progress and generate acceptance.

Remote access opportunities allowed DPS to work with user acceptance testers at deputy registrar locations throughout Minnesota. Rather than require these testers to come to St. Paul, user acceptance testers could test the new system and verify functionality from any location and at any time, potentially allowing for broader and more thorough testing. This type of user acceptance testing not only ensured that the system was working, but also provided an opportunity to get key users into the system early to build system knowledge and trust in the project.

DPS, working with the Minnesota Automobile Dealers Association, also appointed various dealer ambassadors. These individuals helped answer system support questions and helped resolve issues that arose shortly after the system rolled out to the nearly 3,500 vehicle dealers throughout the state. As dealer ambassadors, they also served as advocates for the system to help ease the transition for dealers as they began to use MNDRIVE.

In exchange for their efforts on the project, DPS compensated these stakeholders for their time. Overall, compensation for the embedded subject matter experts, user-acceptance testers, and dealer system ambassadors totaled approximately $410,000—less than 1 percent of overall project expenditures. Despite the relatively small investment, nearly all project members that we interviewed identified the inclusion of these various stakeholders as a key contributing factor to the overall success of the project.

Legislative Engagement and Oversight

The Legislature created the Driver and Vehicle Systems Oversight Committee, a legislative body responsible for overseeing the implementation of VTRS and reviewing the reports provided by OLA, DPS and MNIT, Fast Enterprises, LLC, and stakeholder groups. The Oversight Committee is set to expire six months after the full implementation of VTRS.[49]

Contributing Factor 8: A legislative oversight committee and mandated reporting provided guidance and oversight to the project.

The 2019 law directing DPS to implement VTRS contained various requirements establishing a high degree of project oversight. The law required DPS and MNIT, their vendor FAST, and OLA to each submit quarterly reports to the Oversight Committee. The law also encouraged other stakeholders, such as deputy registrars and vehicle dealers, to submit reports. These reports served as status updates for the committee, allowing perspectives from DPS and MNIT, FAST, stakeholders, and OLA.

Although the law directed the Oversight Committee to meet at least quarterly, committee meetings occurred somewhat less frequently. Given the overall positive quarterly reviews from OLA—identifying minor risks and concerns for the project—combined with project leaders providing informal updates to committee members, more frequent meetings by the Oversight Committee were not necessary. We believe that, had there been significant issues identified within the project, the Oversight Committee would have met to discuss potential resolutions.

Similar oversight committees may be of benefit to future projects. However, the Legislature should consider the overall size of the project (based on cost and duration) and risk. We recommend that the Legislature consider creating similar oversight committees when providing funding for costly (such as projects over $50 million), high-risk, or multiyear system implementations.

[49] *Laws of Minnesota* 2019, First Special Session, chapter 3, art. 2, sec. 34.

List of Recommendations

Recommendations for the Department of Public Safety (DPS) and Minnesota Information Technology Services (MNIT):

- DPS should continue to work with key deputy registrars to enhance service offerings for motor carriers. (p. 22)
- DPS should review its training and communications for motor carriers and ensure that self-service and on-demand training resources are available. (p. 22)
- DPS and MNIT should continue efforts to resolve accessibility deficiencies. (p. 24)
- DPS should work with MNIT and FAST to communicate system changes regularly, as part of its stakeholder communications. (p. 31)
- DPS and MNIT should publish release notes for MNDRIVE. (p. 31)

Consolidated Recommendations for Future Projects:

- MNIT should develop formal system development lifecycle (SDLC) policies, standards, procedures, and guidelines. (p. 15)
- MNIT should develop accessibility testing guidelines, practices, and training to include within its projects. (p. 24)
- MNIT should require IT systems to undergo an accessibility assessment or review prior to releasing a system. (p. 24)
- MNIT, working with MMB as needed, should develop guidance and recommendations for agencies developing budgets for large or multiyear IT projects. (p. 28)
- MNIT should develop standard criteria, guidance, and requirements for use during independent audits of state system development projects. (p. 19)
- MNIT and state agencies should ensure that all components related to a systems development project are managed and tracked both individually and as part of an overall larger program. (p. 16)
- MNIT and state agencies should develop business and technical staffing plans prior to beginning a project to ensure adequate coverage both for the project and for ongoing operations. (p. 18)
- MNIT and state agencies should utilize time tracking tools that allow for a comparison of budgeted project hours to actual applied hours. (p. 18)

OLA

Appendix A:
American Association of Motor Vehicle Administrators (AAMVA) – *System Modernization Best Practices*

The following pages contain high-level best practices for system modernization.[50] These recommendations may benefit future IT system implementation/modernization projects.

BEFORE GETTING STARTED

- Begin with the end in mind.
- Define the vision and develop goals in line with the mission of the agency.
- Complete business process reengineering, data cleansing, and data security efforts before beginning system modernization efforts.
- Reach out to peer agencies in other jurisdictions early in the process and gather and evaluate as much information on similar projects as possible. Make in-person visits, see their operation, and talk to members of the project team. Explore vendor options.
- Obtain ownership for the project at the highest level of the organization. This is crucial because without ownership of all outcomes (both good and bad), projects can easily falter or, worse, fail.
- Remember, the more time spent on planning, the easier the journey.

INTERNAL AND EXTERNAL SUPPORT

- Discuss and make decisions regarding long-term maintenance early in the process.
- Understand the strengths and weaknesses of information technology and business teams in the decision-making process.
- Weigh individual risks and benefits to both internal and external support options before committing to an approach.
- Consider a "blend" of internal and vendor support, allowing the agency to capitalize on the strengths of both internal and vendor support. Success will depend on how well the service-level agreement is written.
- Weigh the pros and cons of modified-off-the-shelf (MOTs), commercial off-the-shelf (COTS), and custom builds and then decide how the system will be managed over time.
- Consider maintenance and support as the total cost of ownership for the project.

[50] These best practices are derived from the American Association of Motor Vehicle Administrators' publication, *System Modernization Best Practices* (2017), 96-104.

BUSINESS CASE DEVELOPMENT

- Develop a written business case that clearly articulates the need for modernization by addressing:
    - business drivers supporting business vision and strategic planning objectives
    - policy or legislative drivers supporting jurisdictional priorities, policies, and legislative mandates
    - human resource drivers to retain knowledgeable staff with appropriate skills, depleting resources required to maintain legacy systems, and resource needs for the project
    - technical drivers to eliminate legacy technologies and architecture, reduce data, eliminate functionality redundancies, reduce the number of technical platforms used, and increase the time and effort needed to implement legislation and policies for the legacy system, in-house, or hosted solution
    - financial drivers to reduce costs, increase revenues, enhance service delivery models, reduce fraud, protect privacy, and reduce maintenance costs on legacy systems
    - items to be fully developed as part of the project plan
- Establish performance measures or key performance indicators (KPI)s and return on investment (ROI) expectations.
- Develop a communication plan and include stakeholder management strategies.
- Engage an independent verification and validation (IV&V) vendor to provide input to the business case, validate foundational assumptions, and/or verify conclusions between the business and IT. Many agencies have found IV&V vendors well worth the cost and effort to engage them.

GOVERNANCE

- Develop a comprehensive governance plan for the life of the system to enable timely decisions and ensure the project stays on track.
- Involve stakeholders. Get them involved early and keep them involved and informed.
- Ensure the agency's executive owns the project and its outcomes.
- Establish a governance board to make decisions to help the project teams succeed.
- Establish an executive steering committee or similar group to provide guidance and oversight to the project.
- Garner buy-in from all levels of the organization.
- Agree on and document a process prior to the start of the modernization effort to deal with unanticipated scenarios.

LEGISLATION AND FUNDING

- Identify champions and detractors, develop appropriate messaging to address potential concerns, and keep them informed regarding program status.
- Include key support personnel in legislative communications as they can help provide continuity of information across legislative terms.
- Educate legislators about the need for the effort and explain funding needs. Explain the consequences of remaining on the existing system.
- Identify funding sources for the project, as well as operational, maintenance, and support costs. Consider nonexpiring dedicated or fee-based funding. Ensure appropriate spending authority is in place.
- Communicate a specific return on investment and provide information on the agency's prior experience in managing large funds to demonstrate sound fiscal management practices.
- Consider the need for a contingency fund for future business needs, legislative additions, other changes, and unexpected requests that may arise.
- Request a moratorium on new statutory changes that may impact the project and institute a code freeze for the current system until the new system is implemented.

ENTERPRISE ARCHITECT

- Engage a dedicated and experience[d] enterprise architect as part of the project team who can also assist with design of the solution.
- Develop an enterprise architectural plan (EAP) to enable the organization to make effective decisions about technology as modernization efforts proceed. The plan should guide decisions about which technologies will be implemented and the infrastructure needed to provide support.
- Complete a gap analysis to identify differences in the "as is" environment as compared with the "to be" environment.
- Ensure network and server capacity planning is accomplished.
- Conduct analysis of the technology environment to ensure hardware and software are compatible with the "to be" environment.

REQUIREMENTS AND METHODOLOGY

- Provide sufficient time to complete requirements gathering.
- Establish a requirements repository for storing project documentation. Update it as changes are made.

- Update project documentation each time a system or business process change is made and do so throughout the lifecycle of the system. Include maintenance and support plans postimplementation. Avoid the temptation to document the solution in lieu of the requirement.

- Develop and use a requirements traceability matrix (RTM) to gather and record requirements and to support development, testing, training, and system support. The usefulness of an RTM cannot be overstated.

- Decide the methodology for requirements gathering — agile, waterfall or structured, or hybrid.

- Document functional, nonfunctional, business, user, system, and stakeholder requirements ensuring they are clear, not subject to misinterpretation, and do not contradict other requirements. Confirm correct implementation through observation and testing.

- Prioritize "absolutely necessary" requirements from those that are "nice to have" based on the implementation timeline, budget, and agency goals.

- Consider the level of detail to include when writing business requirements. Different types of requirements may require different levels of detail.

- Plan for all requirements to be reviewed and approved by a single validation checkpoint.

PROCUREMENT AND CONTRACT MANAGEMENT

- Request and review system modernization materials (e.g., procurements, contracts, project schedules, workplans) from other motor vehicle agencies.

- Clearly outline procurement deliverables expected from the jurisdiction and from the vendor.

- Require award to the successful vendor to be a deliverable-based, fixed-price contract.

- Articulate expectations, establish frank and open communications, and set a clear plan on how contract documentation and sign-offs will occur.

- Develop a "deliverables expectation" document so both the agency and vendor(s) are clear on expectations and objectives of contract requirements.

- Ensure all contracts are included in the oversight plan when managing multiple vendors, including an independent verification and validation (IV&V) and development contract.

- Develop a consistent method for acceptance of contract deliverables.

- Require the vendor sign a service-level agreement (SLA) that includes penalties, liquidated damages, or service credits that ensures needs of business are met.

- Pay a percentage of the overall cost upon acceptance of specific deliverables.
- Ensure the vendor contract contains language that is inclusive from initiation to closure and associated activities for either, regardless of when and why closure is initiated.
- Ensure, through the lifecycle of any project that uses contracted vendors, that files are maintained adequately and that all contractual obligations are followed.
- Develop a detailed contingency plan for any problems that may arise. Include next steps should fall back or resetting be required. Create a roll back strategy plan based on predefined criteria.
- Ensure the project has adequate resources and processes to align efforts to the contract documentation and related activities, such as compliance reports, change management, and other key items that ensure the effort and the contract stay in alignment.

PROJECT MANAGEMENT

- Develop a project management plan (PMP) for each separate project.
- Develop an overall PMP to integrate key elements from the separate projects.
- Follow standardized project management processes or phases to ensure the project is properly managed from inception to successful conclusion.
- Establish or use an existing project management office (PMO) to increase the chance of success for a modernization project.
- Adopt a sound project management methodology.
- Engage a dedicated, trained, and certified project manager. A project manager with PMP certification who has experience in systems modernization or large-scale technology projects is preferred.

SECURITY

- Develop a security plan for the life of the system or facilities. Identify the person(s) responsible for security decisions and tasks, how the projects will adhere to outlined federal or jurisdictional security requirements, internal security practices or guidelines, tools to be used, and processes and schedules for vulnerability assessments and audits.
- Include in the security plan additional security steps that may be necessary to protect data and accesses for vendor staff.
- Establish security protocols if they do not already exist.
- Engage a security officer for the lifecycle of the program. Don’t underestimate the need for an experienced security officer. Motor vehicle agencies maintain a

tremendous amount of PII (personal identifiable information) in which hackers are very interested. Safeguards and monitoring tools are necessary to proactively alert and restrict access to sensitive data.

- Identify resources and a physical location to house both vendor and agency resources and provide accesses for authorities early in the project.

DATA CLEANSING AND MIGRATION

- Ensure the right team is in place to take on this portion of the project and that team members possess the skill sets required to understand the business data and supporting structures.
- Hire a dedicated data steward or assign an employee with expertise of data maintained in the system data steward duties.
- Consider the data cleansing effort as a separate project from the modernization effort.
- As part of the data cleansing activities, use two separate databases (landing and staging).
- Review current data retention requirements before data cleansing efforts begin. If some retention requirements seem unreasonable, change them if possible.
- Document decisions on how to cleanse the data. Document what data may change as a result of the cleansing and assign a level of risk to each change.
- Do not underestimate the manual staff hours needed to identify, amend, and remove data. This will be a long and time-consuming effort for many resources already fully engaged with other responsibilities.
- Establish an issue or defect tracking repository to provide for better monitoring and for documenting system rules, data anomalies, and approved recommendations.
- Use data masking to protect sensitive data elements from project team members or external vendors that do not have appropriate security clearance to view and access such data.
- Data cleansing should be a combined effort between information technology and the business unit to ensure success.
- Complete multiple mock conversions to ensure complete and accurate data migration occurs. The mock conversions also establish timeframe necessary to accomplish the migration over go live weekend.

ORGANIZATIONAL CHANGE MANAGEMENT

- Hire or appoint a dedicated organizational change management (OCM) manager to increase awareness of the project at all levels of the organization, provide regular communications, and ensure participation and buy-in from both internal and external stakeholders.
- Develop a comprehensive OCM approach because it is critical to garnering buy-in and to the ultimate success of the program.
- Consider both IT and the business in OCM activities.
- Acknowledge and develop a plan to promote change management throughout the lifecycle of the project.
- Include aspects of OCM in the communications plan. Plan for stakeholder engagement, develop strategies to reduce or eliminate resistance, and create approaches to increase support and buy-in.
- Consider putting "sensors" or "change agents" throughout the organization to measure understanding by staff and to promote acceptance of change.

TRAINING

- Develop a comprehensive training plan that describes the strategies, activities, and tasks necessary to provide the business unit with the skills necessary to operate the new system successfully.
- Engage trainers early and require they attend project meetings enabling them to continually update training materials as changes are made to the program.
- Establish a testing "sandbox environment" for user training opportunities months before project implementation. Such environments can be costly, so be sure proper funding is in place.
- Conduct an assessment of training and user readiness and include a review of the results of training and any testing conducted.
- Develop effective training and training materials that are user centric, process oriented, modular, sustainable, efficient, and standardized and that build the understanding, skills, and capabilities employees need to use and maintain the new system.
- Provide for continuous training for the life of the system.

COMMUNICATIONS

- Develop internal and external communications plans for the duration of the project that are evaluated constantly and modified as needed. Identify the frequency of communications, distribution method, responsible parties, medium to be used, and key high-level messages.

- Clearly define and share roles of business users, information technology, and vendor staff. Update as roles change and as new members are added to the team.
- Sign agreements with agencies who interface with the system to ensure a mutual understanding of the effort and resources required by everyone involved.
- Identify internal and external stakeholders and determine how to best engage them during the project. A needs assessment can help determine the level and timing of interactions with external stakeholders.
- Consider labor relations or collective bargaining units in planning and communications about the program. If job functions or positions are being eliminated, following labor contractual obligations and bargaining agreements is not only necessary, but it is also a good business practice to engage them early.
- Identify a dedicated resource to manage communications to internal and external stakeholders throughout the project.
- Regularly share information with everyone impacted by the project and regularly request feedback.

PEOPLE AND FACILITIES

- Enlist a full-time, dedicated, and experienced project manager.
- Complete workforce planning to identify the number, type, experience, knowledge, and skills of staff needed to achieve program objectives.
- Develop a project resource and staffing plan. Address resources and hours required of staff assigned to the project in a project resource plan and address ongoing work while project resources are dedicated to the legacy modernization effort in the staffing resource plan.
- Obtain agreement from executive sponsors on the need for key project resources.
- Identify leaders that can carry the project forward to completion and reassign job duties as needed.
- Co-locate business, information technology (IT), and vendor project teams.
- Identify a facility or location and determine equipment needs for the project team.
- Plan for the future state and the impact changes will have to existing business and IT staff. Plan to modify, add, or eliminate positions based on changes that will occur when the modernization project is fully implemented.

SOFTWARE DEVELOPMENT LIFECYCLE

- Use the software development lifecycle (SDLC) approach that best fits the need of the agency and the program to build a quality business solution. After it has been decided, adhere to the methodology.
- Test the validity of the enterprise architecture of the modernized system by following SDLC activities.
- Establish a gateway review processes to formalize SDLC activities required when moving from one phase to the next.

TESTING

- Develop a test plan that describes the scope, approach, resources, and schedule of testing activities.
- Follow established change management processes and revise project documents as appropriate.
- Allocate an adequate period to ensure quality testing of the system. Avoid the temptation to reduce the testing time to make up project delays.
- Clearly identify the roles and responsibilities of business and information technology staff for the various types of testing.
- Ensure that close coordination and communication takes place among developers, business analysts, and testing team to avoid delays and ensure timely testing.
- Identify testing personnel early in the program to allow for sufficient resource management.
- Address hardware and the number of environments needed (e.g., DEV, quality assurance, user acceptance testing, and training). Keep environments separate.
- Consider federal, state, or provincial requirements such as the Americans with Disabilities Act (ADA) when developing requirements.
- Provide metrics to management that addresses progress, performance, and status of software testing.
- Identify test exit criteria (go/no go) as part of test script development.
- Ensure testing has been accomplished on “real” data for security access, data appearance, auditing, and so on.

SYSTEM READINESS

- Identify key elements of system readiness early in the program as extensive planning is required.
- Develop an implementation plan that provides information on how the new system will be deployed and transitioned to operations. Identify steps required to revert to the legacy system if significant issues are discovered during implementation.
- Include stakeholders in planning efforts so they understand their part and the effect the new system will have on their operations.
- Perform load testing often so users can test the system multiple times before go live.
- Ensure network, server, and database load testing occurs and proves adequate for desired production response time.
- Complete multiple mock conversions to optimize the outcome and ensure consistency in timing and content.
- Choose a deployment option — big bang, phased, pilots, parallel processing — that best fits the agency's needs.
- Develop a detailed list of migration tasks and the individual responsible for each.
- Develop a detailed contingency plan for any problems that may arise. Include next steps should fall back or resetting be required. Create a roll-back strategy plan based on predefined criteria.
- Establish a go-live command center and identify a team to staff it during implementation. Determine the timeline the team is expected to be in place.

LONG-TERM AND ONGOING OPERATIONAL SUPPORT

- Create a transition plan early in the process that includes the deployment date, transition date, length of transition, transition end date, and when operations and maintenance support begins.
- Include a warranty (at least six to eight months) for software fixes and hardware defects.
- Develop standardized release and emergency schedules for quick-fixes of defects based on criteria contained in the service-level agreement (SLA).
- Allow a few users to retain access to the legacy system for a set period of time after decommissioning, which allows for issues or concerns not originally identified during the transition period to be verified between the new and legacy systems.
- Identify how remedial training will be scheduled and administered after deployment.

- Identify permanent quality assurance (QA) and user acceptance testing (UAT) teams, which will be needed to perform tasks associated with future system or software upgrades and enhancements.
- Develop a maintenance and support plan that outlines how defects, enhancements, change requests, system and hardware maintenance, warranties, and other contractual obligations will be addressed. Include plans for decommissioning the legacy system.
- Prepare a project evaluation report to provide a status of the project, support communication plan messaging, and inform the decision-making process for project closeout.
- Ensure transfer of data, documents, and information from the vendor(s) to the agency.
- Plan for permanent QA and UAT teams to perform tasks associated with future system or software upgrades and enhancements.
- Complete long-term planning that establishes processes for defect resolution, system enhancements, and changes.
- Address any changes to software licensing timeframes and give consideration for infrastructure support of hardware and equipment that reaches end of life or is no longer supported.
- Report on lessons learned and baseline operational metrics from pre–go live compared with current operations.
- Prepare for an internal or external project audit.

SIGNS OF A TROUBLED PROJECT

- Don't ignore warning signs of a potentially troubled project. Be careful to fully assess the issues and not just treat the symptoms. Elicit support for navigating the project into balance.
- Potential signs of trouble include:
    - lack of sponsorship or executive support
    - extensive resource changes
    - missed dates and scheduling adjustments
    - changes in methodology, scope, or other "contract" modifications or issues
    - process or methodology issues
    - lack of communication or collaboration

  - potential legal actions
  - financial challenges by the vendor or its parent company

- Determine reason(s) for any delays and whether they require more time to fix or whether other adjustments are needed.
- Follow a formal methodology to be successful. Legacy modernization cannot be done by ad hoc procedures.
- Ensure there is good communication between the vendor(s) and the agency.
- Take immediate action when staff issues are identified. Most people issues do not self-correct.
- Adhere to contract terms, project management methodologies, and governance processes to protect the agency's interests in a lawsuit if one occurs. Be sure to establish, update, and maintain project documentation and a solid filing and maintenance system.
- Adhere to project's resource allocation plans. If either the jurisdiction or vendor increases staffing, then activities will become misaligned to the plan.

Appendix B:
Office of the Legislative Auditor's Special Review of MNLARS and Resulting Recommendations

The content below is an excerpt from the Office of the Legislative Auditor's Special Review of the MNLARS project, *Factors That Contributed to MNLARS Problems*, published February 2019.[51]

Special Review Recommendations:

1. MNIT should improve its oversight of agency-based software application projects.

2. Top agency officials should serve as "project sponsors" for large, high-risk software application projects.

3. Leaders of large projects should include key stakeholders and independent quality assurance representatives in project governance activities.

4. Project management staff should ensure that there is full documentation of project governing body meetings.

5. When necessary, agencies should streamline business processes before they build information systems based on those processes.

6. Agencies should strive to break large software projects into smaller pieces—or, if this is not feasible, have contingency plans in the event that large-scale software releases do not go as intended.

[51] Office of the Legislative Auditor, Special Review, *Factors That Contributed to MNLARS Problems*, https://www.auditor.leg.state.mn.us/sreview/mnlarsfactors.pdf.

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Appendix C:
Governor's Blue Ribbon Council on Information Technology's *Independent Expert Review of MNLARS* and Resulting Recommendations

The content below is an excerpt from the Governor's Blue Ribbon Council on Information Technology's *Independent Expert Review of MNLARS*, published May 1, 2019.[52]

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,

[52] Rick King, Theresa Wise, Mick Atton, and Amy Albus, *Independent Expert Review of MNLARS* (May 1, 2019), 3, 5-7, https://dps.mn.gov/divisions/dvs/forms-documents/Documents/independent-expert-review-of-mnlars.pdf, accessed March 1, 2022.

- **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.

Vehicle System Recommendations:

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.

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.

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

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.

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.

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.

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

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

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.

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

Additional Recommendations:

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

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

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.

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

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).

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

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Appendix D:
MNDRIVE and e-Services for Business – User Experience and Satisfaction Survey

In January 2022, OLA invited the nearly 15,000 users of MNDRIVE and e-Services for Business to participate in a survey to learn about users' experiences and satisfaction with the new system. We received responses from 2,561 individuals, representing a total response rate of approximately 18 percent.

Survey respondents were first asked to identify the type of organization for which they worked.

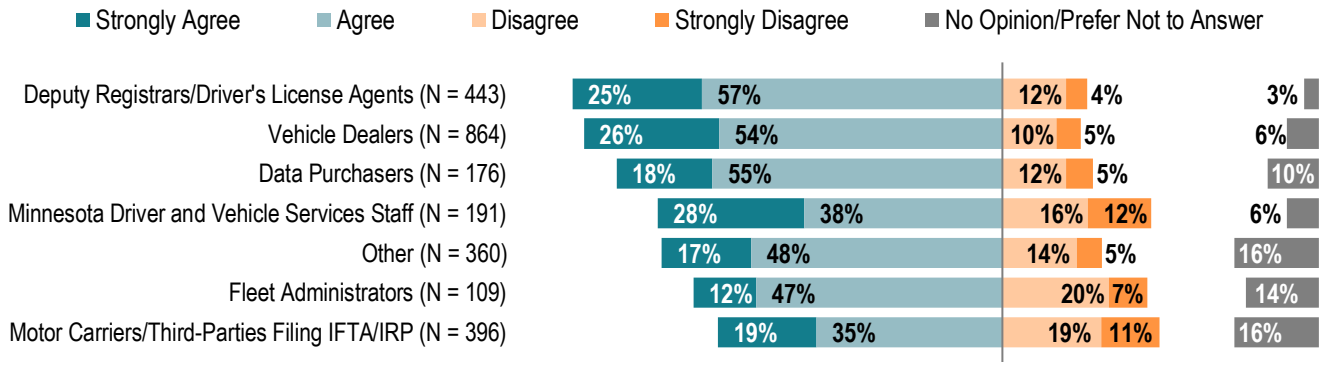
Please select the option below that best describes the type of organization that you work for that requires your use of MNDRIVE or e-Services for Business:

Self-Identified User Type	Count	Percentage of Respondents
Data Purchaser (looking up driver/vehicle records or purchasing data in bulk)	176	7%
Deputy Registrar/Driver's License Agent (public or private)	443	17%
Minnesota Department of Public Safety – Driver and Vehicle Services	193	8%
Organization with a fleet of motor vehicles	111	4%
Other (please explain)[a]	361	14%
Trucking Company/Motor Carrier (or third party filing Prorate or IFTA/IRP on behalf of a carrier)	411	16%
Vehicle Dealer	866	34%
TOTAL	**2,561**	**100%**

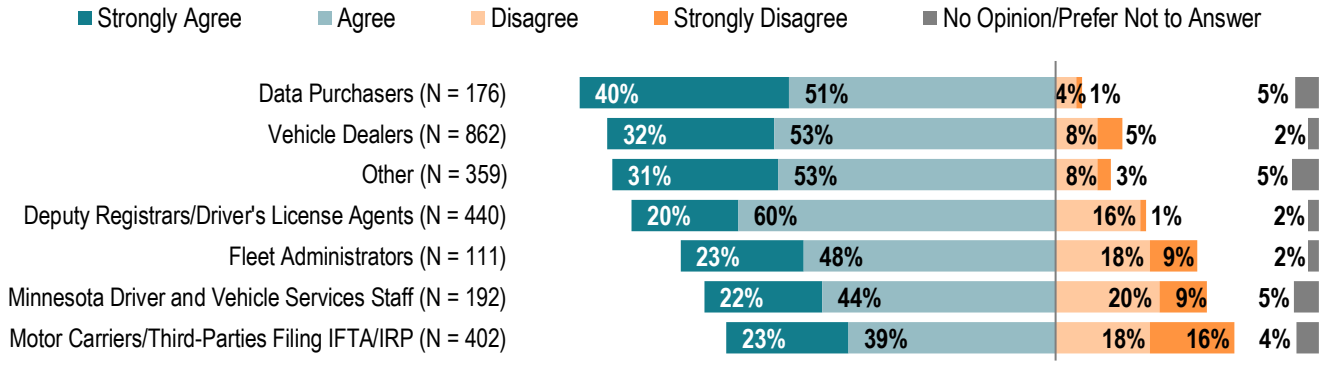
[a] Respondents selecting "Other" indicated in a follow-up question that they were proctors for online knowledge testing; government agencies/law enforcement/attorney offices using MNDRIVE data for investigative purposes; towing companies; credit unions/banks/lenders; and dealers for trailers, boats, or vehicle parts (scrap yards).

Next, respondents were asked to select the extent to which they agreed or disagreed with statements regarding training, system errors, business processes, changes in workload, communication, and overall satisfaction. Their responses are detailed in the following pages.

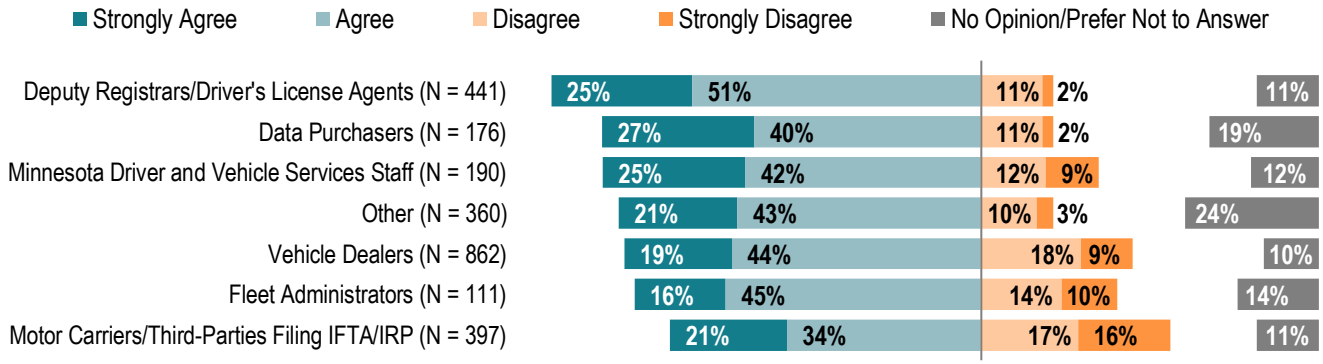
Statement 1: The training I received prepared me to successfully use MNDRIVE/e-Services for Business.



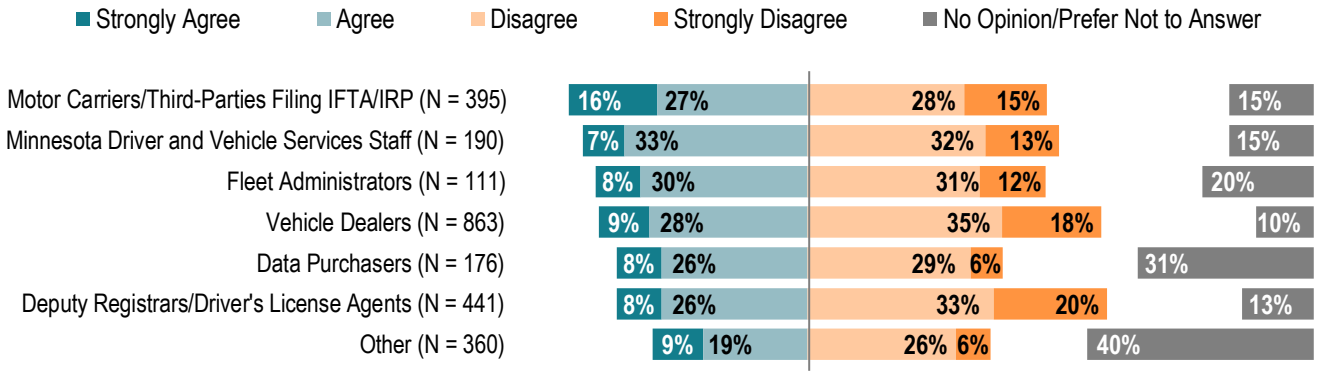
Statement 2: I am able to complete my work within MNDRIVE/e-Services for Business without experiencing errors.



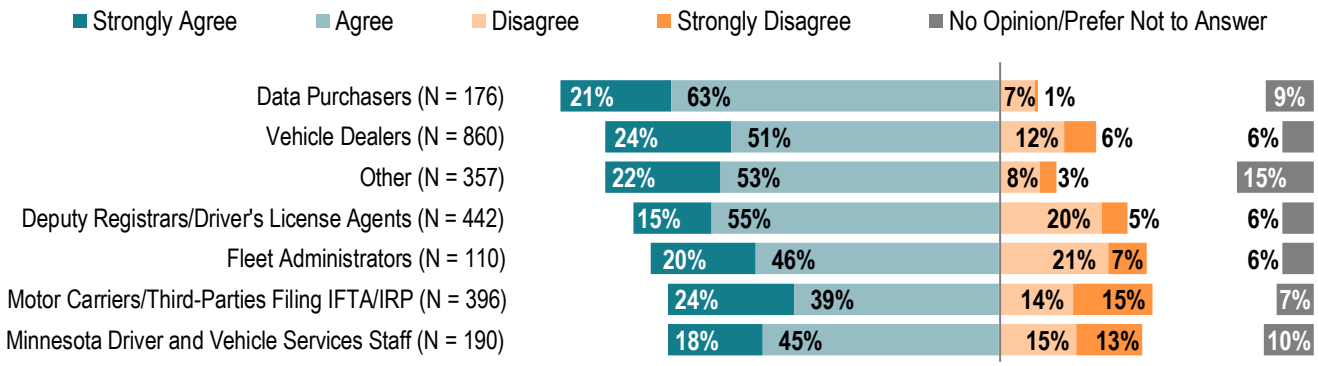
Statement 3: MNDRIVE/e-Services for Business has improved my business processes.



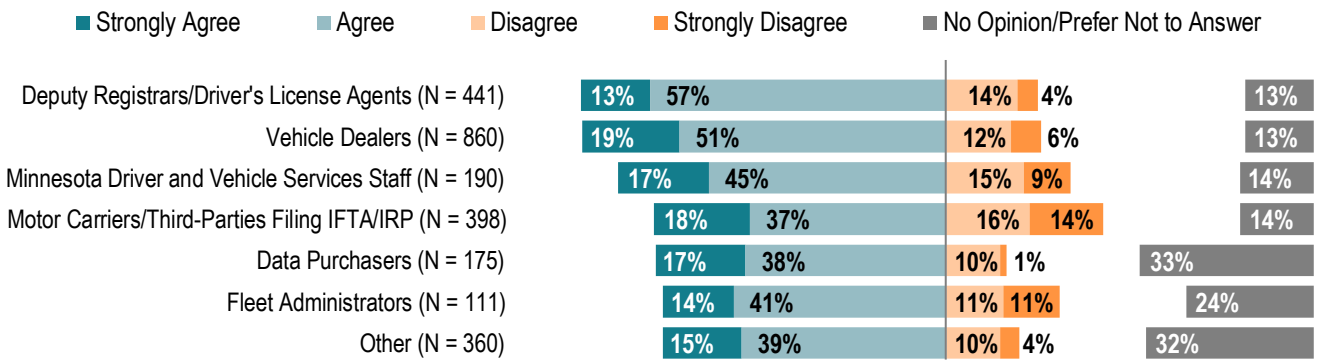
Statement 4: MNDRIVE/e-Services for Business has decreased my workload.



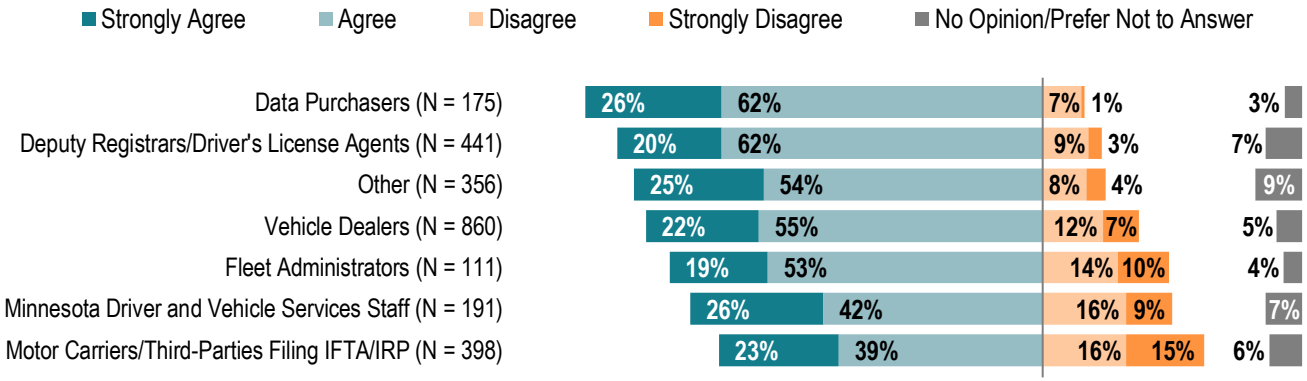
Statement 5: I am satisfied with the communications that I have received from DPS regarding MNDRIVE/e-Services for Business.



Statement 6: MNDRIVE/e-Services for Business has better prepared DPS to meet my needs.



Statement 7: Overall, I am satisfied with MNDRIVE/e-Services for Business.



NOTES: Survey respondents self-identified their business type based on a predefined list. Respondents selecting "Other" represent users from the system's broad user community, including users from the court system, the Minnesota Department of Human Services, and the Minnesota Department of Transportation. Percentages may not sum to 100 due to rounding.

SOURCE: Office of the Legislative Auditor.

July 26, 2022

Judy Randall
Legislative Auditor
Office of the Legislative Auditor (OLA)
Room 140 Centennial Building
658 Cedar Street
Saint Paul, MN 55155-1603

Dear Mrs. Randall,

The Minnesota Department of Public Safety (DPS) and Minnesota IT Services (MNIT) want to thank you and your team for the work done on the Vehicle Title and Registration System (VTRS) over the past few years. We appreciate the professionalism of your staff as they completed their work and the opportunity to review and comment on the report titled "Vehicle Title and Registration System Final Project Audit".

We are proud of the strides the state has made in improving the VTRS from past systems. DPS and MNIT understand that this project is one of the most impactful in the state, as it touches nearly every Minnesotan. The timeframe of this project is unique as it occurred mainly during the COVID-19 pandemic. Project staff was forced to transition to a work-from-home model and make changes to the project like virtual training to keep everything on time.

In the report, the OLA points out multiple key factors that contributed to the success of the project overall. We want to highlight a few items such as project ownership, oversight, and commitment to success from the highest level of the state down to individual project team members. We also believe the legislature providing the full project budget with a contingency and proper spending authority made a large difference.

DPS and MNIT agree that partnering with FAST Enterprise (FAST) for their commercial off-the-shelf (COTS) solution was a major factor in the success of VTRS. The COTS solution from FAST allows DPS and MNIT to leverage the FAST core solution and enhancements identified by other jurisdictions that have been incorporated into FAST's solution. We appreciate the analysis the OLA put into the recommendations provided in the report. Many of these recommendations have been discussed at some level by DPS or MNIT. We believe this report will help provide information that everyone can work from to make better-informed decisions on a future project.

Similarly, MNIT appreciates the broader opportunities for improvement identified in the report in areas such as systems development lifecycle, IT project budget development, and audit principles. The Modernization Playbook that was implemented in 2020 was designed to accommodate multiple disciplines and industry best

practices. MNIT views project delivery as a continuous journey and leverages the Modernization Playbook enhancements as a critical tool for how project and systems are deployed by state agencies. We agree that continued development of policies, standards and guidance in these areas will bring about greater consistency and alignment to the Modernization Playbook principles and help ensure quality when undertaking major IT projects. We also recognize that project methodologies must be flexible to accommodate the diversity of systems development/implementation efforts that occur with various vendor partners in the State's executive branch and that guidelines and standards will ensure the right approach is applied for the right implementation.

We would like to thank our dedicated employees and business partners with FAST, Minnesota Deputy Registrars Association (MDRA), Deputy Registrars Business Owners Association (DRBOA), Minnesota Automobile Dealers Association (MADA), and the Minnesota Trucking Association (MTA) as well as the VTRS Oversight Committee, and Rick King for their active engagement with the successful completion of VTRS. The success of VTRS was a joint venture to ensure Minnesotans are able to conveniently and successfully title and register their motor vehicles.

We appreciate this opportunity to inform you about the progress the State has already made and will continue to make to improve the state's driver and vehicle services.

Sincerely,

John M. Harrington
Commissioner
Minnesota Department of Public Safety

Tarek Tomes
Commissioner and State Chief Information Officer
Minnesota IT Services

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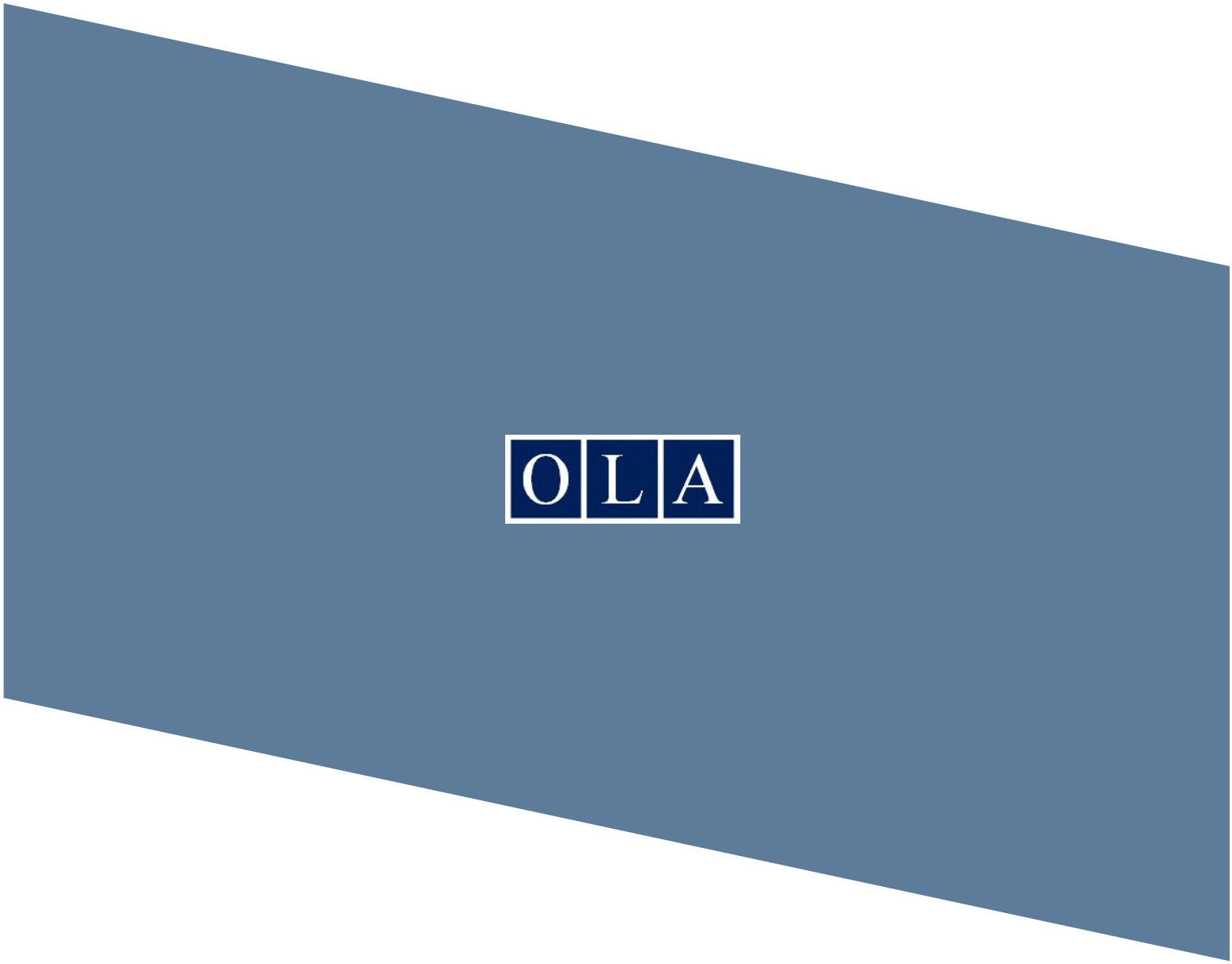

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