June 11, 2018

Representative Paul Torkelson
Chair, Transportation Finance Committee
Minnesota House of Representatives
100 Rev. Dr. Martin Luther King Jr. Blvd.
Saint Paul, MN 55155

Senator Scott Newman
Chair, Transportation Committee
Minnesota Senate
95 University Ave W
Saint Paul, MN 55155

Chairs Torkelson and Newman,

Please find attached the second MNLARS Steering Committee report, as mandated by Minnesota Laws 2018, Chapter 101. This letter is to affirm that the statements submitted to the committee in this document are complete and truthful to the best of our knowledge.

Once the prioritization process is completed with stakeholders, we will need to address what is technically possible and what we can afford to do based on current resources. When we have the scope of what is possible, we will reassess the budget and provide a detailed timeline for a ramp-down.

Please let us know if you have questions related to this report or would like any additional information.

Sincerely,

Johanna Clyborne
Commissioner and State Chief Information Officer
Minnesota IT Services

Ramona L. Dohman
Commissioner
Minnesota Department of Public Safety

MNLARS Quarterly Update

June 2018

MINNESOTA IT SERVICES

Contents

Executive summary

This document contains the June 11th update to the members of the Legislative Oversight Committee (LOC) on MNLARS. Each item in this document is in direct response to the items due to the committee by June 11th as outlined by statute: Minnesota Laws 2018, Chapter 101. The quarterly update outlines the benchmarks, timeline for meeting those benchmarks, and methods used to include stakeholders in both the process and progress of the implementation of the MNLARS system.

Minnesota IT Services (MNIT) and the Department of Public Safety (DPS) continue to work on multiple fronts. In addition to working on legislative oversight benchmark reporting, the agencies are engaged in another round of prioritization of the Master List with the Executive Steering Committee. The updated Master List, including the rank each item received, will be provided to the LOC after the final ranking meeting, which is schedule for June 13, 2018. Preparation for release 1.12 in late June also continues. Since this is the largest release to go into MNLARS since its launch, User Acceptance Testing (UAT) demonstrations and live in the field testing will be crucial to the success of the release. The agencies will work closely with stakeholders on all pre and post-release activities to ensure 1.12 is a success.

While there has not been a lot of movement on the 7 performance measurements required by the LOC since we last reported on April 30th, we have included updates and improvements in the following areas:

- MN Deputy Registrar Business Owner Association and Northland Auto Dealers Association members added to ESC. (pg. 4)
- Performance Measure #3: MNLARS launched the ability of liaisons to edit inventory (plates and stickers) in May of 2018 and will provide additional liaison edit functions for registration coming mid-June. (pg. 12)
- Performance Measure #6: System performance had a slight improvement in April with 100% uptime. Due to a brief outage in May, we remain at 99% uptime for all vehicle and driver systems.
- Reprioritization of the Master List: Occurred on 5/30/18, 6/5/18 and another scheduled meeting for 6/13/18.
- Successful data update program released 15,000 registration stickers and 30,000 license plates back into system inventory to be used. This will help with large volumes of inventory deputy registrars have been holding in their offices. (pg.12)

Unfortunately, despite the above mentioned progress, we are forced over the next few months to make some very difficult decisions. Due to spending limitations after receiving only 9.6M of the original 35M request, project leaders are reassessing the team's composition, what is possible for system progress using only current resources and, ultimately, when another ramp-down will need to occur.

Key milestones

The key milestones detailed within this report are measured by the performance requirements outlined in Minnesota Laws 2018, Chapter 101, as follows:

- Subd. 2 (b) (1) - Extent to which MNLARS defects have been resolved
- Subd. 2 (b) (2) - Extent to which gaps have been resolved
- Subd. 2 (b) (3) - Improvements to edit transactions
- Subd. 2 (b) (4) - Reduction in backlog of vehicle titles
- Subd. 2 (b) (5) - Extent of errors in transactions – data fixes
- Subd. 2 (b) (6) - System performance
- Subd. 2 (b) (7) - Customer service responsiveness

Governance

Since the April 30th report, 3 new voting members have been added to the Executive Steering Committee (ESC). These members represent the Minnesota Deputy Registrar Business Owners Association, the Northland Independent Auto Dealers Association and a replacement member for the Minnesota Deputy Registrars Association.

MNLARS Executive Steering Committee (* = voting member)		
Massey Afzali* Product Manager, BCA	**Amber Backhus*** MN Auto Dealers Association	**Dana Bailey** Director of projects and Initiatives, MNIT
Jeff Ball* Project Consultant/Business Analyst	**Tami Bartholomew** Administrative Supervisor, DVS	**Rayah Barton*** Management Analyst
Amanda Coppin* Deputy Registrar, South Saint Paul (Member MDRA)	**Thomas DeVita*** Support Services Program Director	**Ash Durham** Project Architect
Jim Forsell Deputy Liaison Supervisor	**Tom Henderson*** Vehicle Services Program Director	**Scott Lambert*** MN Auto Dealers Association
Al Lentsch* Northland Independent Auto Dealer Association	**Neng Lor*** Deputy Registrar, Hennepin County (Member MDRA)	**Beckey Mechtel** MNLARS Communication
Vic Moore* Minnesota Auto Auctions	**Laura Laudenbach*** Deputy Registar, Stearns County (Member MDRA)	**Cassandra O'Hern** Deputy Commissioner, DPS
Dawn Olson Director, Driver and Vehicle Services, DVS	**Joan Redwing** Interim CBTO, DPS	**Deana Schweitzer*** Deputy Registrar, Prior Lake (Member MDRBOA)
Denise Vogel* Deputy Registrar, Morrison County (Member MDRA)	**Donny Vosen*** Deputy Registrar, Brainerd	**Mike Wright** Senior Manager of Operations, MNIT

MNLARS Project Management Team

Colleen Adams Program Manager	**Dana Bailey** Director of Projects and Initiatives, MNIT	**Tami Bartholomew** Administrative Supervisor, DVS
Rayah Barton Management Analyst	**Thomas DeVita** Support Services Program Director	**Ash Durham** Project Architect
Jim Forsell Deputy Liaison Supervisor	**Tom Henderson** Vehicle Services Program Director	**Dawn Olson** Director, Driver and Vehicle Services, DVS
Joan Redwing Interim CBTO, DPS	**Jeff Schmitz** DVS Deputy Director	**Dawn VanRyn** Supervisor, Project Management Office, MNIT
Mike Wright Senior Manager of Operations, MNIT	**Laura Wakefield** Development Manager/ Lead Scrum Master	

MNLARS Senior Leadership Team

Dana Bailey Director of Projects and Initiatives, MNIT	**Jenna Covey** Deputy Commissioner, MNIT	**Cambray Crozier** Communications Director, MNIT
Jon Eichten Legislative Director, MNIT	**Bruce Gordon** Communications Director, DPS	**Cassandra O'Hern** Deputy Commissioner, DPS
Dawn Olson Director, Driver and Vehicle Services, DVS	**Joan Redwing** Interim CBTO, DPS	**Kate Weeks** Legislative Director, DPS

MNLARS Executive Leadership Team

Dana Bailey Director of Projects and Initiatives, MNIT	**Johanna Clyborne** Commissioner, MNIT	**Jenna Covey** Deputy Commissioner, MNIT
Mona Dohman Commissioner, DPS	**Cassandra O'Hern** Deputy Commissioner, DPS	

Quarterly project status summary

Since this report was released on May 1, 2018, MNIT successfully deployed release 1.11.2 and added release 1.13 for duplicate title printing. MNIT continues project efforts focused on four releases, updating project methodology and reporting, and updating the MNLARS system design, tools and software development standards**.**

Release Schedule		Target Deployment	Current Status
1.12	Partial Electronic Vehicle Titling Registration, end of day close	June 2018	
2.0	Liaison inventory management	Deployed May 2018	
2.1	Liaison fixing registration entry errors	June 2018	
1.13	Duplicate Title Printing	July 2018	

Key: **Green:** Project performing to plan; **Yellow:** Project viability is at risk; **Red:** Project requires corrective action

Status of upcoming releases: There are three releases in progress to be deployed for the MNLARS system. Release 2.0 was successfully launched in May of 2018, which included a fix enabling deputy registrar liaisons to edit plates and stickers inventory. Release 2.1 is planned for mid-June 2018, and release 1.12 is planned for late June 2018. Release 1.13, Duplicate Title Printing, is planned for July of 2018 in order to meet the statutory effective date of August 1, 2018.

Filling vacancies on the MNLARS project team after March ramp down: The line item budget passed along with the 9.6M of funding on March 22nd, continues to restrict technical oversight by state employees on the project. Because no more funding was appropriated at the end of session, the focus of recruiting has shifted from staffing all vacant roles (18 roles) on the team to completely resolve all defects, gaps and new features requested by stakeholders, to a new focus of briefly engaging a smaller subset of specialized contract skills (4 roles) on the team to stabilize the system and prepare transition documentation. These stabilization activities and new transition documents are designed to allow for a smooth resumption of software development when funding for remaining system construction and system maintenance is available.

Updating project methodology and reporting: The team has updated the MNLARS project methodology to align the current resources, with the key internal and external stakeholder features and business process needs, in order to facilitate MNIT's documentation and traceability of complex business rules and business processes to MNLARS project deliverables. The use of combined iterative development (such as Agile/Scrum) with traditional software project management enables greater transparency of reporting and is intended to provide reporting consistent with MNIT standards and the needs of the project's stakeholders, partners, and the Legislative Oversight Committee (LOC).

Design Optimization: As summarized in plain language for the May 1st report, MNLARS' objective is to find the fastest path to system stability and new feature delivery for stakeholders given the funding available. In support of this objective, MNIT has updated the application architecture to leverage technical and software development best practice improvements. The updated architecture, new tools and new software development best practices has been colloquially named: MV2. MV2 is an abbreviation of Motor Vehicle 2.0 and includes our design optimization for the MNLARS project and product. The basis of this naming convention was derived from the technology industry, where MNLARS has adopted a release naming process similar to Microsoft's approach to name their code releases with successive numbers like Windows 7, Windows 8, and Windows 10.

Figure 1 is an illustration of a small part of the MV2 improvements. The diagram represents an updated code branching and release cadence for MNLARS where MNIT has modified their tools so several releases can be worked simultaneously while also ensuring high quality.

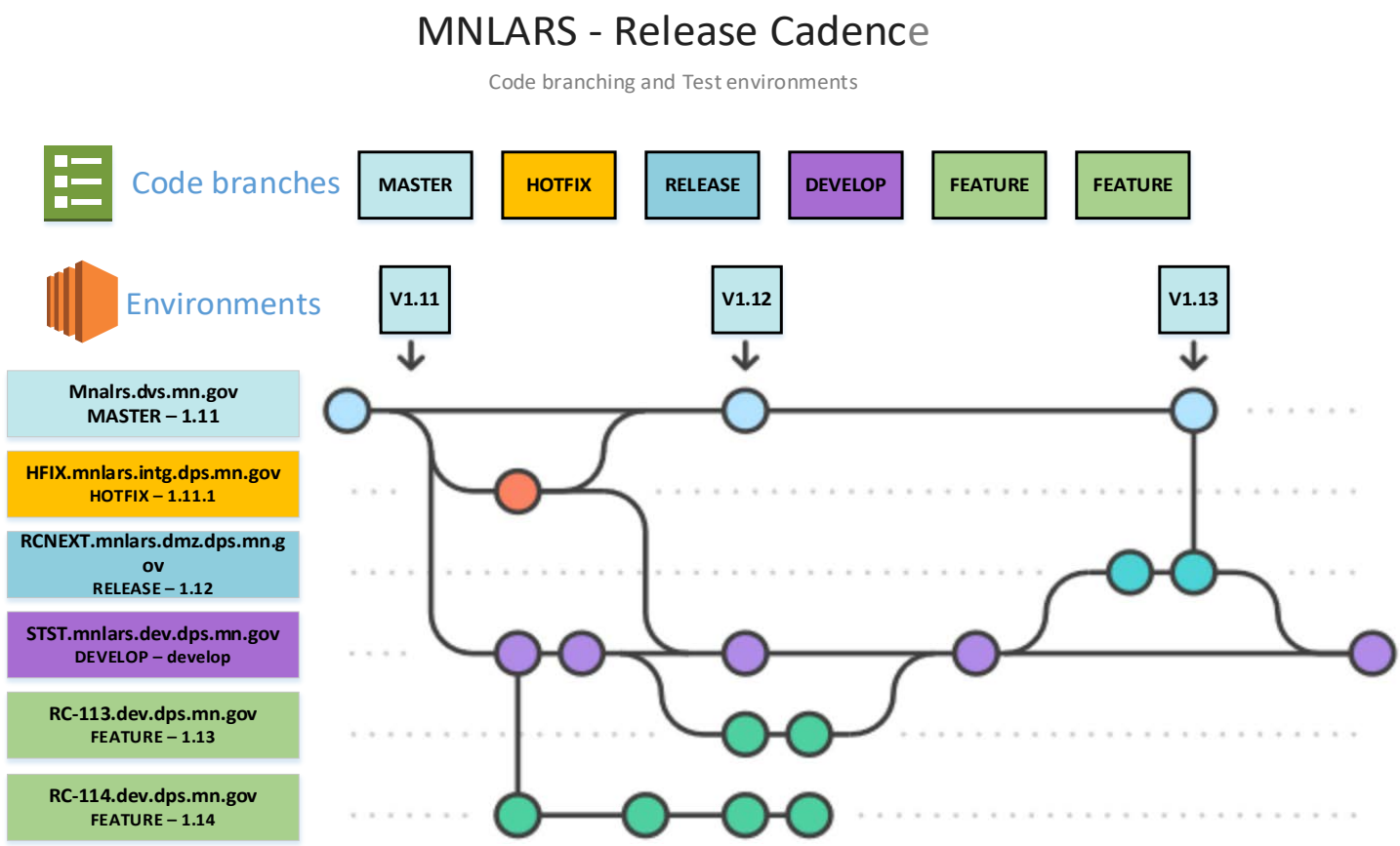


Figure 1 - MNLARS Release Cadence

More specifically, MV2 is a set of enhancements to the MNLARS architecture, tools, and software development standards and practices MNIT has undertaken since November of 2017 to improve the MNLARS product and program. Also, MV2 provides improved coding output that best positions the MNLARS application to deliver stakeholder priorities faster and with a smaller testing effort required to launch high quality new fixes and features.

Some highlights of a few other components and benefits of MV2:

- MV2 has a new release and code branching flow and cadence designed for several releases to be worked on simultaneously.
- MV2 is a new set of user-interfaces and application program interfaces (APIs) in our architecture that integrate with the existing application databases, domain-driven design, and MNLARS business rules.
- MV2 is a response to best position the MNLARS application for faster software delivery given the maturation of the state's software development standards over the last 2-3 years. For example, the state's position in cloud computing is now well known and the transitioning to cloud hosting allows for parallel development and testing environments that are also lower cost over the long term. The cloud-hosted enterprise solution allows MNIT to quickly develop new features in one technical environment while simultaneously stabilizing the IT system in a separate environment, so that both development activities can happen at the same time. This speeds up the development process and provides a seamless experience for our stakeholders after the features have been tested and deployed.
- MV2's updated application architecture capitalizes on the state's cloud platform which frees the MNLARS system from limitations on its current hardware capacity and allows MNIT to achieve better scalability, help to limit outages, and implement performance improvements.

MV2 is not a new system. There are many aspects of the original system architecture that are working and effective, such as the database model, the domain object framework, and system interfaces with over 60 external applications including law enforcement, financial institutions, and the Department of Human Services. MNIT has worked to leverage the strengths of the original system to support the upcoming project deliverables while maturing some parts of the architecture, tools and software development best practices into MV2.

MNLARS development and implementation timeline

The primary focus of the MNLARS project is to address high priority defects, the gaps and features needed by deputy registrars, auto dealers, and other system stakeholders.

Guided by stakeholder's prioritization in the master list process, the project timeline below reflects a focus on delivering priority defects and gaps, which MNIT and DPS anticipate to be completed with remaining funding. However, due to the absence of additional funding, most of the planned progress will need to be put on hold because there will be no money to pay contractors to continue working on the system.

Milestones

Delivery deadlines

Deadline	Milestones	Status
Q1 2018	January 31 2018 MNLARS defects and gaps roadmap	Completed
Q2 2018	Launch release 1.11.2	Completed
Q2 2018	Project re-charter with new project management and reporting	In Progress
Q2 2018	Re-Score and refresh stakeholder priority list	In Progress
Q2 2018	Launch release 1.12	In Progress
Q3 2018	Launch release 1.13 (duplicate title printing)	In Progress
Q3 2018	Partial launch Electronic Vehicle Title Registration (EVTR)	In Progress
Not Funded	Deliver all defects/gaps/new features for stakeholders	In Progress
Not Funded	Complete all edit functionality for stakeholders	In Progress
Q3 2018	Begin transition to MNLARS support model (ramp-down)	Not Started

Additional roles staffing date milestones

Deadline	Milestones
Q2 2018	(2) DBA/SQL developers for performance tuning entity framework and data corrections
Q2 2018	(2) Business redesign analysts/product management analysts
Not funded	(1) UI designer
Not funded	(2) Program Manager/Project Manager – backfill for turnover
Not funded	(1) Business redesign analysts/product management analysts
Not funded	(3) .NET tech leads managing concurrent development work
Not funded	(2) Solution Architects for technical oversight of parallel development – backfill for turnover
Not funded	(4) .Net Developers – backfill for turnover
Not funded	(1) DBA/SQL developer for performance tuning entity framework and data corrections

Legacy decommission deadlines

Deadline	Milestones
TBD	Finance: Swift integration, accounting controls, reporting
TBD	Prorate / IRP / IFTA (commercial trucks) title and registration functions
TBD	Dealership licensure
TBD	HP permits legacy systems support - commercial permitting
TBD	Document imaging: Stellant

MNLARS performance measures

Performance measures #1 and #2: extent to which MNLARS gaps and defects have been resolved

Updates since May 1 Report: One confirmed release has been added to the schedule. This is release 1.13, which has one large new feature (duplicate title printing), one medium sized feature (fleet pre-bill), and 2 defect fixes. This brings the total to 263 defects and gaps resolved since the July 2017 MNLARS launch. Once we have completed the Master List refresh and reprioritization process more releases will be scheduled as long as they fit within the constraint of MNLARS remaining funding.

As of June 1, 2018 another 163 defects, gaps, and new feature requests still remain for the system. This is down from 284 in the May 1 report. The next release, 1.12, delivers a large amount of fixes and is the largest MNLARS release since the original product launch. Release 1.12 is scheduled for June, and addresses five different stakeholder priorities, including: editing functionality for liaisons, office close-out enhancements, Electronic Vehicle Title Registration (EVTR) for auto dealers that is ready for integration with the vendor, and data fixes around inventory.

MNLARS EVTR code will be delivered in release 1.12 and then integrated with the vendor software for a rollout starting in late 3rd quarter 2018 to dealers and registrars.

Definitions:

- A **gap** refers to functionality that is required by the stakeholders, but has not yet been developed.
- A **defect** refers to existing functionality that is not working, or is incorrectly implemented.
- The **scale** of an individual gap or defect can range from small, simple fixes (such as creating a new fee type) to very large, complex enhancements that include significant system redesign (such as modifying editing functionality across the full MNLARS system).
- A **workaround** is a process or additional clarifying information developed by Driver and Vehicle Services (DVS) to assist deputies and internal staff in an alternative way to help a customer.
- **Electronic Vehicle Title Registration (EVTR)** allows customers to get plates and registration from a dealer in order to speed up the registration and plate process.

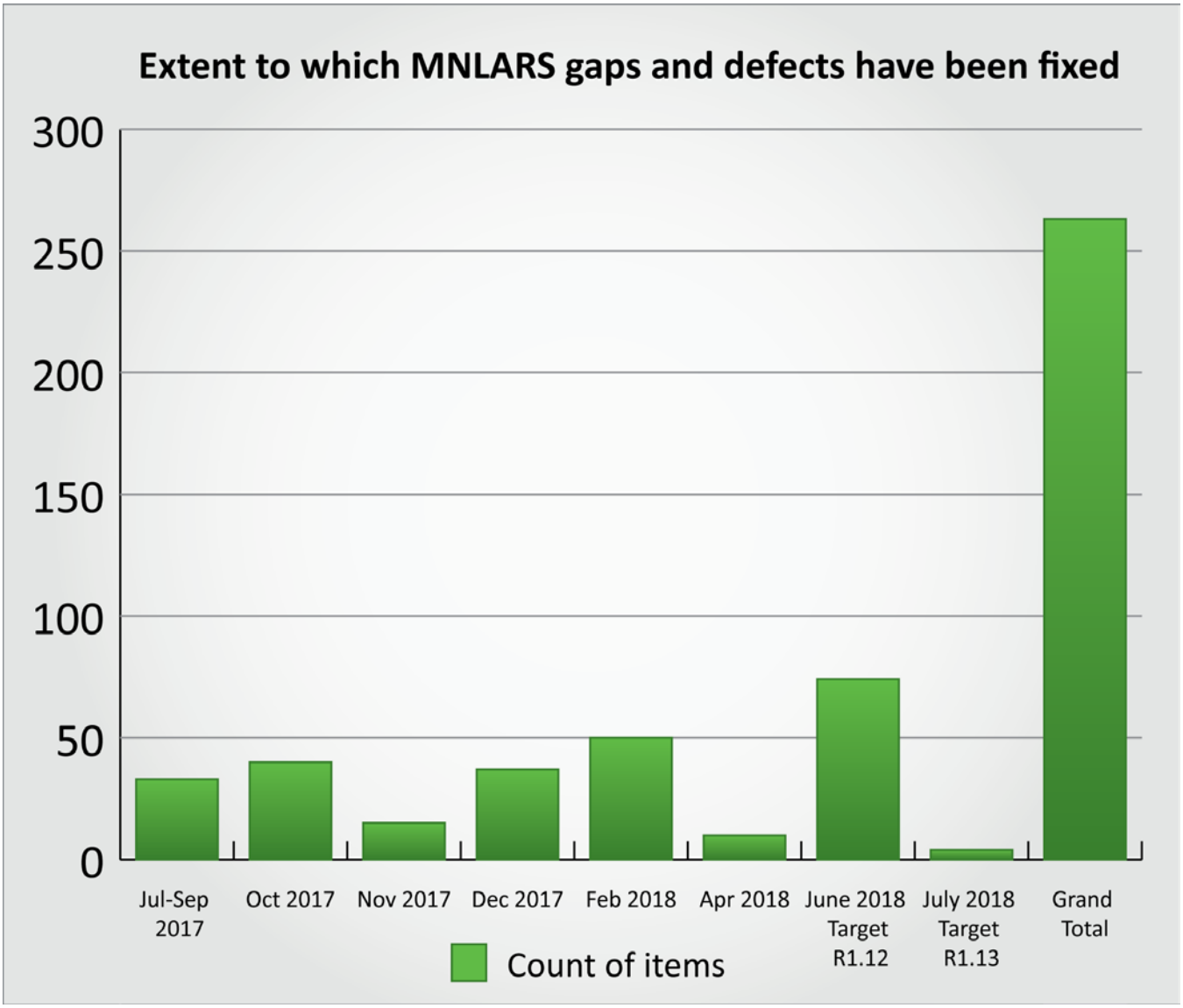


Figure 2 - Extent to which MNLARS gaps and defects have been fixed

Figure 2 does not represent the scale or size of each work item delivered, but instead, the progress towards resolving the centralized list of itemized gaps, new feature requests and defects.

Remaining gaps and defects

The MNLARS Master List tracks gaps, new feature requests and defects. As of 06/01/2018, there are 163 items remaining on the Master List. Of these, 43 are gaps, 88 are defects, and 32 are new feature requests. It is important to note that in addition to gaps, new feature requests and defects that have been completed or are in process of completion, 85 of the unranked items on the Master List were removed as duplicates, or reclassified as non-production issues, leaving a total of 163 items on the Master List. Some of the items remaining on the MNLARS Master List are quite large (like adding editing functionality throughout the application) and others are small fixes (like a request to change the color of the expiration year box – “it’s grey and should be bigger”).

The MNLARS Master List is a living document and requires quarterly updating to ensure it aligns with current stakeholder priorities. Starting the last week of May 2018, the MNLARS Master List is undergoing a refresh and re-prioritization by stakeholders. This list informs the priorities of feature delivery for the remaining funded releases.

Performance measure #3 - improvements in the ability of MNLARS users to edit transactions

Update since May 1 Report: On May 30, MNLARS ran a data update program that successfully released approximately 15,000 registration stickers and approximately 30,000 license plates back into inventory. They are now available for use by deputy registrars. In addition, a release delivered in May provided the first set of administrative editing tools to deputy registrar liaisons, which allows them to fix plate and sticker inventory upon request. The next release, scheduled for mid-June p2018, will provide additional administrative editing tools for deputy registrar liaisons, allowing them to correct registration data entry errors. These two administrative functions for liaisons will be the only editing capability provided within the confines of current resources. Future editing capabilities may include the following features, but not without additional funding:

- Transaction cancellation
- Inventory management
- Editing an unpaid transaction
- Updating title and registration records outside of transactions

To add these additional editing capabilities into MNLARS, MNIT and DPS must complete system stabilization and performance tuning work, and additional funding must be available.

Performance measure #4 – reduction in the backlog of vehicle title applications

As was noted in the April 30, 2018 report the MNLARS work queue has declined approximately 46% from a highpoint in December 2017, and is shown in the table below.

Also as noted, DVS reported title turnaround times are influenced by the increase of in-coming transactions associated with increased new and used car sales that is typical in the spring and summer months. This seasonal increase continues and is reflected in the work queue numbers. To meet this increase, DVS staff continue to work mandatory overtime and use contracted staff to augment DVS work efforts.

DVS has negotiated with the Department of Revenue for the return of temporary, seasonal staff, starting on June 4, 2018.

Date	Title applications in work queue
12/1/2017	379,591
1/2/2018	311,312
2/1/2018	222,903
3/1/2018	179,253
4/1/2018	194,949
5/1/2018	204,104
6/1/2018	219,079

DVS measures title turnaround times by the number of days required to complete an application beginning when the customer visits the deputy registrar. DVS measures title turnaround times in three classes: out-of-state (OS) applications, manufacturer certificate of origin (MCO) applications and Minnesota (MN) titles. Figure 3 shows the longest title turnaround times for each title class since February 19, 2018 while figure 4 shows historical title turnaround times since May 2009.

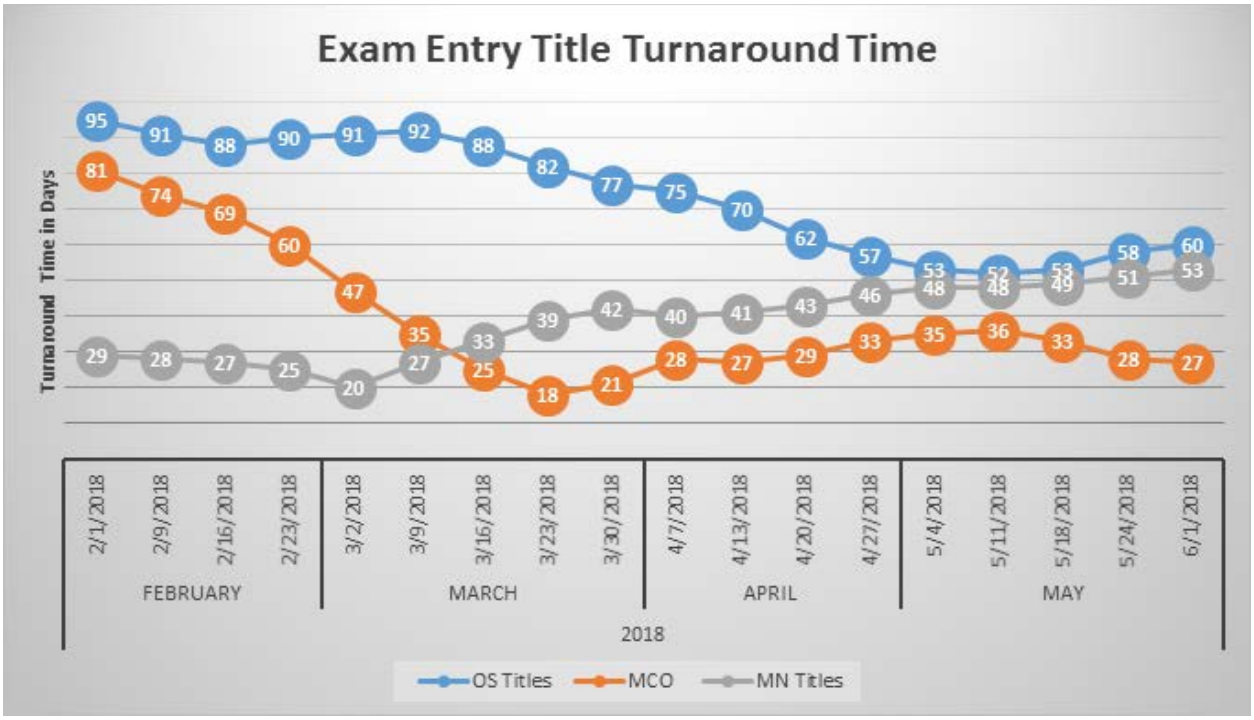


Figure 3 - Exam entry title turnaround time

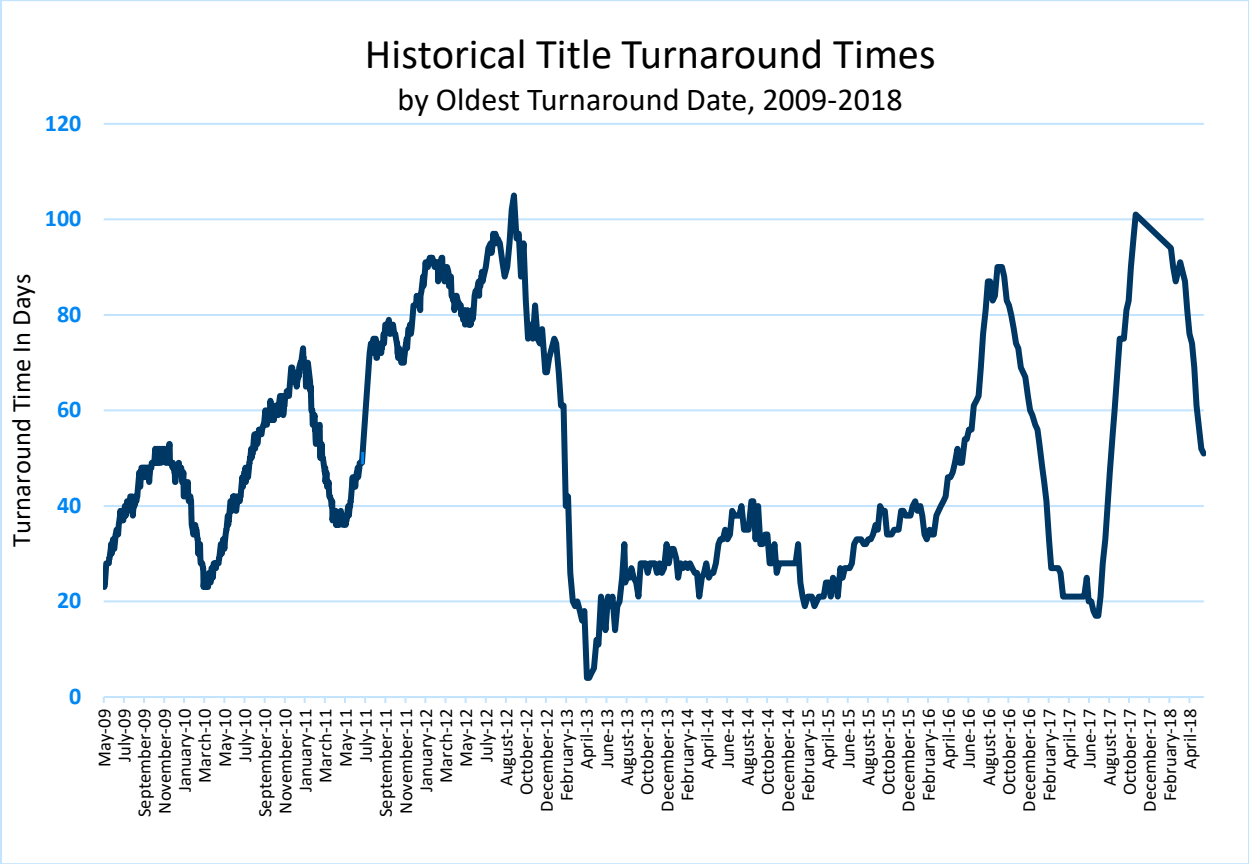


Figure 4 - Historical title turnaround times

Performance measure #5 - extent of errors in driver or vehicle services transactions*

Update since May 1 Report: Additional data sweep scripts were added to assist BCA with data corrections to the BCA MNLARS interface. These scripts resolved issues with law enforcement seeing multiple valid registrations and/or seeing "applied for title" instead of a valid title which MNLARS had on file. These errors are now cleaned up by regularly scheduled data sweep scripts while permanent fixes for these issues are scheduled in release 1.12.

There are two sources of data errors in the system: data entry errors, and transactions hung up due to an error in the system. The current MNLARS system doesn't have sufficient record editing capability and a backlog of errors has built up over time. MNIT is currently processing a backlog of records that need data correction. To date, approximately one fourth of one percent of the motor vehicle records in the new MNLARS system have required some type of data correction. These corrections have been managed by a new Data Corrections Team established December 1, 2017.

Motor vehicle transaction errors are fixed as they are identified by the data corrections team. This includes data issues reported by deputy registrars, DPS, and the public. MNIT also runs a series of programs to search through the data to discover and correct discrepancies.

Deputy registrar liaisons report that by the time they review a request for assistance from a deputy registrar, 80% of issues were fixed due to proactive data searches and programmatic corrections applied to MNLARS data. This leaves a remainder of 20% of requests that are complex and require the data corrections team to research and make a special fix.

Given additional funding, MNLARS has a plan to deliver self-service editing capabilities for Driver and Vehicle Services liaisons and deputy registrars, that currently require assistance, including:

- Gross weight not entered correctly in the legacy system.
- Registration transaction is hung up due to an error in the system.
- Payment for a transaction is recorded twice due to an error in the system.
- Fixing data entry errors for registrations and titles.
- Incorrectly entered inventory.
- Title transfer was performed on the wrong vehicle.

** Driver Services' legacy mainframe does not have the capability to report transaction errors; this capability will be available after October 1, 2018, in the new Driver system developed by FAST Enterprises.*

Performance measure #6 - system performance including slowdowns, outages or other performance issues

Load testing validates system performance prior to each MNLARS release. This performance testing discipline was enhanced in the fall of 2017 to include more tests, greater coverage, and a full copy of the MNLARS production environment. Previously, performance testing only occurred quarterly and did not occur with each release that was put into the MNLARS system.

Improved load testing has resulted in the ability to:

- Identify and resolve software or system bottlenecks prior to system rollout.
- Determine application configuration issues and provide tuning guidance prior to system rollout.
- Validate that system capacity is sufficient.
- Ensure system resources scale linearly as the workload increases.
- Find and resolve memory leaks and other types of performance constraints that would impact system performance.
- Mitigate three core risks; speed, scalability and stability.
    1. **Speed:** How quickly the system processes each user request.
    2. **Scalability:** How system hardware resources scale under stress and increased concurrency levels before rollout.
    3. **Stability:** How system uptime changes under prolonged use and extreme load conditions before rollout.

The 2018 MNLARS test plan enhances our performance strategy to include real end user response times over various network conditions and cross browser performance metrics, such as Internet Explorer and Google Chrome. These metrics will provide typical end user experience response times.

Definitions:

- **Uptime** means the time the system is up and available during business hours.
- **A slowdown is** any system response that returns in less than one second.
- **An outage is** a period of time that a system fails to provide or perform its primary function.
- **Legacy driver is** a legacy system that supports driver services, which will be replaced by FAST driver services in October of 2018.
- **Mainframe is** a legacy system that supports vehicle services.

Uptime, slowdowns and outages:

In addition to load testing, the operations team tracks uptime for the systems that system stakeholders use. Industry standard for a slowdown is to alert any transaction that returns in over four seconds, but due to the importance of system performance for MNLARS, MNIT and DPS set the bar higher for monitoring and reporting to alert us to any potential performance issues and traditional performance issues. For the purposes of the graphs below potential performance slowdowns, known performance slowdowns and outages have been

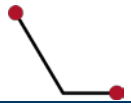
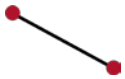
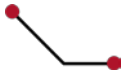
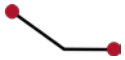
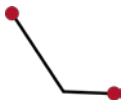
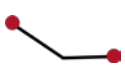
summarized as outages. However, it is important to acknowledge, downtimes and slowdowns both have adverse effects on how deputy registrars, auto dealers and other stakeholders conduct business.

System response time test results

Update since May 1 Report: There are no statistically significant changes to system response times in MNLARS between the May 1, 2018 report and this June 11, 2018 report. Due to reduced MNLARS funding, the team size of performance tuning developers has been reduced by 50%, this will significantly slow down our release of performance improvements. Also, early tests for release 1.12 indicate it performs as well as or slightly better than prior MNLARS releases. We continue to evaluate system performance with each release to ensure performance does not degrade with subsequent releases.

MNLARS performance has improved since the July 2017 launch baseline and tuning engagement with Microsoft Premier Services. As the application is tuned further, improvements will continue.

The chart demonstrates the improved response time since launch and from release to release. When the system launched, response time varied by transactions. The “apply for title” transaction took 25 seconds to load, and today the same transaction takes under seven seconds. Less complicated transactions, like “sign-in”, took three seconds to load, and today it takes less than one second.

Release	**MNLARS launch**	**1.11.2**	**1.12**		
Test Information	**90 percent - 7/19 baseline**	**90 percent - 4/16 baseline**	**90 percent - 5/21 baseline**		
Transaction Name **HTTP Load Scripts**	90%			**Trend**	**Summary**
Sign-In	3.239	.0869	.82		Measures the time it takes the user's credentials to be authenticated against MNEIAM and successfully log into the system.
Title Queue	New functionality added	5.736	4.6		This is the backlog of titles that are currently being processed. These transactions represent navigating to and around the queue. **Uptrend is a result from larger table sizes.**
Deputy registrar search	2.61	.607	.609		These transaction are the various search transaction/options that deputy registrars use throughout the workday.
Apply for title	25.676	7.294	6.87		“Apply for title” represents one of the most commonly used business transactions in MNLARS. The steps indicated in 20-28 are the typical user workflow.
Registration renewal	12.52	6.079	5.96		“Registration renewal” represents the core transaction of MNLARS. Like “apply For title,” it exercises a large part of the system's internal functionality/API calls (i.e. vehicle, inventory, finance, 3rd party calls, and online registration.)
Title transfer	15.098	5.565	5.97		“Title transfer” allows users to transfer a title to another party.

Vehicle systems uptime: April 2018 and May 2018

Update since May 1 Report: There was a minor improvement in uptime in April of 2018 where all Vehicle and Driver systems showed nearly 100% uptime. Subsequently, MNLARS and legacy systems have returned to 99% uptime due to a brief outage at the end of May. This outage is currently under investigation for root cause analysis.

Figure 5 and 6 show uptime and slowdowns, measured in hours, for the months of April and May of 2018 for all vehicle systems. The systems are trending at over 99% uptime during business hours. This graph also shows the down time for each of the vehicle systems supported, including legacy driver and the mainframe, but system slowdowns cannot be tracked on these legacy systems. On the far right of the graphs, uptime and outage metrics include both system slowdowns and outages for the MNLARS system and DVS permits.

MNIT has set a one second response time alert on its monitoring tools, which is far more aggressive than the four second industry standard. The uptime numbers shown below summarizes all outages and slowdowns over one second.

April 2018 Uptime

- DVS Permits – 100% uptime with no slowdowns or outages
- ESupport – 99.96% uptime with no slowdowns or outages
- Mainframe – 100% uptime with no slowdowns or outages
- MNLARS - 100% uptime with no slowdowns or outages

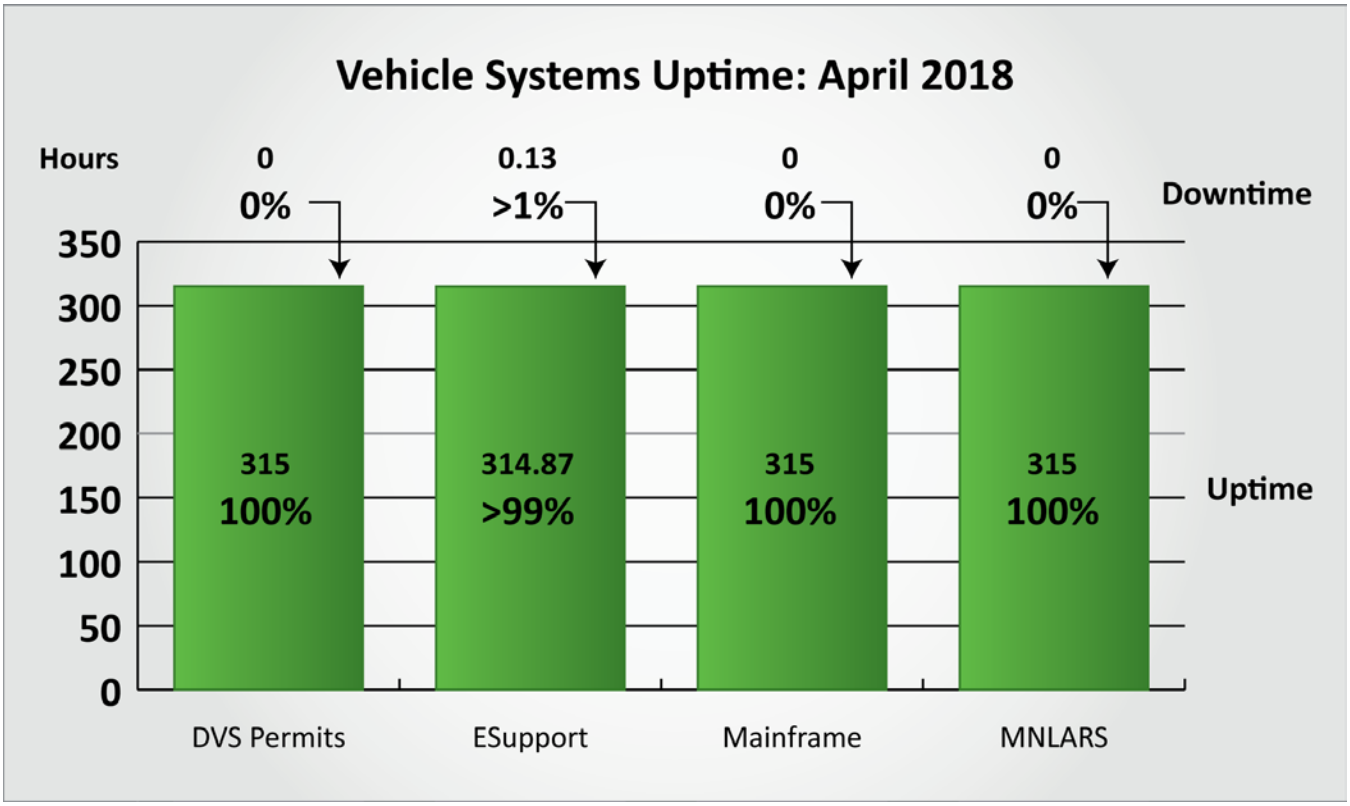


Figure 5 - Vehicle systems uptime: April 2018

May 2018 Uptime

- DVS Permits – 98.84% uptime with no slowdowns or outages
- ESupport – 100% uptime with no slowdowns or outages
- Mainframe – 100% uptime with no slowdowns or outages
- MNLARS – 99.71% uptime with no slowdowns or outages

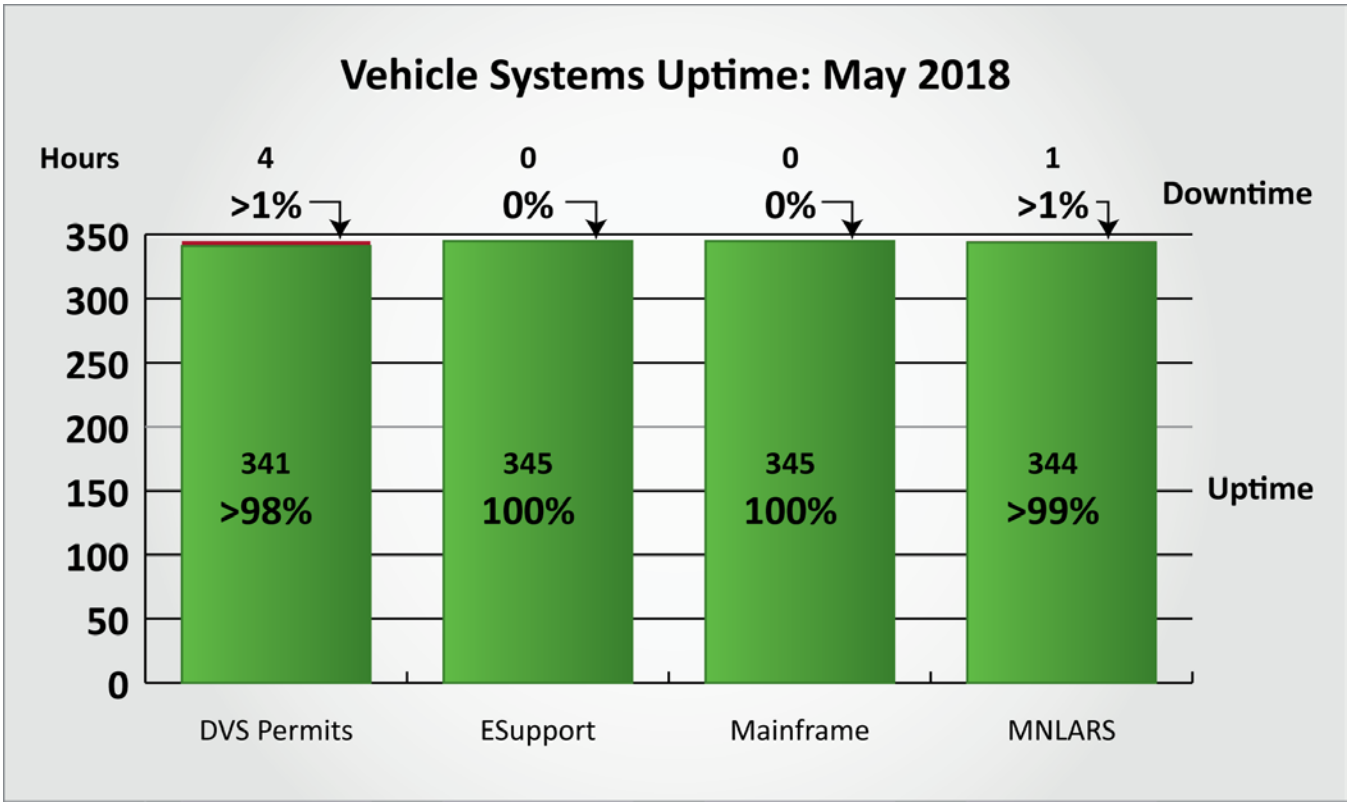


Figure 6 - Vehicle systems uptime: May 2018

Performance measure #7 - customer service responsiveness

The DVS Public Information Center (PIC) encompasses 24 phone lines and several email channels. Unlimited phone servicing is provided to law enforcement and deputy registrars with priority routing in front of general public calls. Unlimited email servicing is provided with response times based on the capacity of available agents. Public phone lines have limited servicing based on the capacity of available agents and size of the phone network causing incoming calls to be rejected when exceeding these capacities. During the March, 2018 - May, 2018 time period 1,005,172 calls were received of which 702,402 calls (69.88%) were rejected and sent to a busy message. Compared to the preceding quarter (October 2017 to December 2017), call volumes increased 20.0%.

To improve customer service, DVS implemented mandatory overtime and hired, and continues to hire, temporary staff to reduce the number of unanswered calls and untimely emails. In addition, the Department of Administration Office of Continuous Improvement is assessing the PIC to determine possible business processes that will also improve customer service.

Figure 7 shows the call volume pre and post MNLARS. The vertical line represents the date of the MNLARS rollout.

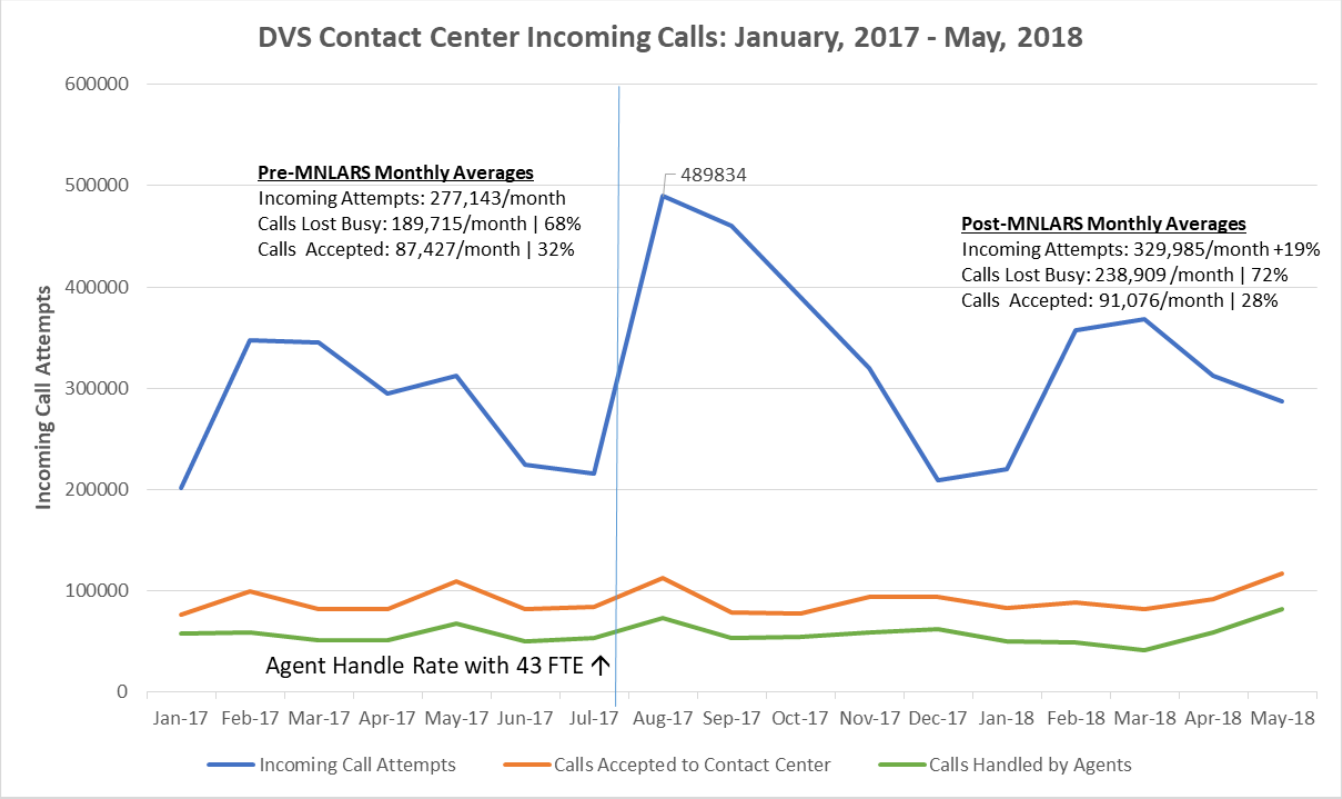


Figure 7 - DVS contact center incoming calls: January, 2017 - May, 2018

Total calls to DVS contact center from 3/1/2018 to 5/31/2018

The following chart contains specific information about the volume of calls and emails to the Public Information Center (PIC) from March-May 2018.

Phone line	Number of calls
Public phone lines (19)	968,795
Deputy registrar* lines (4)	35,472
Law enforcement line (1)	905
Total calls	1,005,172

*DPS Driver and Vehicle Services Registrar lines include deputy registrar and driver's license agents.

All public communication – public phone lines (19)

Call type	Number of calls
Incoming calls	968,795
Accepted calls	266,393
Rejected calls	702,402
Calls offered to agents	196,655
Abandoned calls	32,033
Calls handled by agents	161,690
Average speed to answer	07:12 minutes

*Public communication does not track MNLARS specific calls to public phone lines.

Definitions:

Incoming calls: All attempted calls to the contact center.
Accepted calls: Calls that immediately entered the contact center system upon dial without busy.
Rejected calls: Calls rejected due to high volume and sent to a busy message.
Calls offered to agents: Caller has selected a menu option and was placed in queue to speak to a live agent.
Abandoned calls: Queued calls to speak to a live agent that disconnect/hang-up while in the queue.
Calls handled by agents: Queued callers have been connected to speak to a live agent.

All public communication – email

Email type	Number of emails
Vehicle services emails received	19,837 emails
Driver services emails received	13,757 emails
Outgoing responses	44,212 emails
Total unprocessed emails	3,787 emails – on 5/31/18
Furthest date unprocessed	4/13/18 (48 days) – on 5/31/18

Deputy registrar communication – deputy registrar phone lines (4)

Call type	Number of calls
Total calls from deputy registrars	35,472
Segment: MNLARS specific calls	6,944
Average speed to answer	9:09 minutes

MNLARS calls* are those selecting option “MNLARS Navigation” or “MNLARS Transaction”.

Deputy registrar communication – email

Email type	Number of emails
Total emails from deputy registrars	10,890
Total unprocessed emails	560 emails – on 5/31/18
Furthest date unprocessed	5/21/2018 (10 days) – on 5/31/18

Plan for user acceptance testing (UAT)

DVS staff performs user acceptance testing (UAT) to ensure that all business and system requirements are met. DVS staff develops test scenarios and writes test cases based on new functionality, and DVS staff tests these scenarios and cases prior to each release. DVS staff also perform regression testing to ensure existing functionality remains as it was built. This is an ongoing process throughout the building of the MNLARS system.

DVS/MNIT will conduct two types of UAT to validate upcoming releases. DVS plans pre-release demonstrations with stakeholders, and shares test scenarios ahead of demonstrations in order to elicit feedback on test coverage and system functionality. DVS/MNIT also will engage stakeholders to do "live" UAT testing, using the same business test scenarios as in the demonstration.

UAT demonstration

DVS/MNIT has modified the UAT process to host webinar demonstrations and live UAT demonstrations in Saint Paul. This provides stakeholders the ability to give more complex feedback about multiple scenarios that could happen under a given transaction. DVS/MNIT will test this expanded model of UAT on the 1.12 release, which is scheduled for late June.

Participating stakeholders are notified five days prior to a UAT demonstration to make sure they can successfully sign in to WebEx. During UAT, DVS/MNIT presents how a fix or functionality will work in the system. Additionally, they collect any feedback or concerns that stakeholders have. DVS/MNIT hosts the UAT demonstration before the release goes live and polls the stakeholders at the end of the UAT to get feedback on whether or not they believe the defect was corrected.

Stakeholder "live" user acceptance testing

Subsequent UAT will include stakeholders coming in person to St. Paul to execute business test scenarios using the MNLARS UAT test system. This way, stakeholders will have a choice of which method would give them the most assurance that the release works within the scope of the defects and gaps addressed. Between 10 and 20 stakeholders will participate in live user acceptance testing demonstration.

Plan for stakeholder input on code releases to MNLARS

Executive Steering Committee

The Executive Steering Committee is comprised of the Minnesota Deputy Registrars Association, the Minnesota Deputy Registrar Business Owners Association, the Minnesota Auto Dealers Association, the Northland Auto Dealers Association, Manheim Auto Auctions and MNIT and DPS personnel. It currently meets every Wednesday from 2-4 p.m. During those meetings, the focus centers on how MNIT and DPS are making MNLARS better. The Executive Steering Committee recently went through another prioritization process of the Master List, which includes both defects and gaps in functionality. The result of that process is an updated Master List reflecting current priorities of all stakeholders. This updated Master List is included in the report.

Master list process

Members of the Executive Steering Committee completed the reprioritization of the master list on June 5th. Provided the project is not ramped-down, reprioritization will continue to be scheduled on a quarterly basis since it's a process that needs to accommodate changes bound to occur in the normal course of business.

The items in any given release will rarely be delivered in exact order of ranking. There are many factors that come into the bundling process for each release. While stakeholder priorities are the number one factor in deciding what is included in a release, with a multi-disciplined approach, it will never be the only factor. IT also determines the optimal sequence in packaging to address the priority items on the list based on the ability to build any given item into the system.

Once the content of the release is put together, the ESC reviews the list. MNIT and DPS walk through each line item and members have the opportunity to give feedback and ask questions about overall content.

Emergency master list additions process

MNIT and DPS have established an emergency escalation process. This process allows any member of the ESC to bring an urgent need to the table. MNIT can also bring up critical security-related items that it must act upon immediately to avoid a data or access breach.

The item of concern gets elevated to the emergency ESC subcommittee. These members volunteer for a "tour of duty" – to be available at short notice and help triage any critical issues. Different ESC members rotate to fill this role every three months. These members help decide a plan of action and assist MNIT and DPS in reporting out any decisions made on a particular emergency item at the next ESC meeting the following week.

Post deployment production testing

Live-in-field release tests occur with each release. Each participating deputy registrar tests the release with actual customer transactions during post deployment check out. With this live testing, we are able to confirm every transaction the deputy registrars process go through successfully in the system, to ensure there is no need to roll back the release.

Prior to the in-field testing, the UAT team sends out identified test scenarios to a number of stakeholders who then make sure that they have real transaction data that can be used to test the scenarios. This data is an actual transaction the stakeholder will process for their customer on the day of testing, since their system will be live.

MNIT and DPS notify volunteer testers 30 minutes in advance of when the test process begins. MNIT and DPS use WebEx for screen sharing and monitoring purposes. Stakeholders perform their transaction while on a conference call with the UAT team and other registrars and auto dealers. This way, testers have the ability to confirm the transaction or share any issues or concerns they have.

After testing each item, the UAT team asks stakeholders to verbally acknowledge that their test was successful. If the stakeholders are unable to do so, someone on the UAT team will get all of the details about what went wrong with the transaction and take that back to the designated emergency ESC in an immediate conference call. Should something unexpected occur, a go/no-go decision may be required. The emergency ESC makes that decision with DPS and MNIT.

Plan for communications for transparent MNLARS outages and system slowdowns

The communication plan is comprised of a three part process to keep stakeholders informed and updated as soon as MNIT and DPS become aware that something is wrong with either MNLARS or one of the DVS legacy systems (legacy driver, mainframe, motor vehicle permits).

Step 1: Send preliminary notification to stakeholders confirming there is an issue.
***Step 2*:** Identify issue with stakeholders, give approximate timeline for resolution.
Step 3: Send final notification indicating resolution and providing additional details when necessary.

MNLARS service interruption - communication procedure

To ensure continuity of operations and service, MNLARS, legacy driver, and motor vehicle permits staff will enact the communications procedure outlined below.

0-30 minutes Determination of impacted applications and services.

< 30 minutes **First stakeholder notification:**

DPS service desk sends initial communication sent to deputy registrars and dealers, acknowledging that MNIT and DPS know there is an issue with MNLARS or one of the legacy systems (legacy driver, mainframe, motor vehicle permits). As soon as possible, DPS service desk sends the generic preliminary notification to system users.

Delivery method:

- DVS staff sent via Outlook
- Deputy registrar and dealers via GovDelivery

30-45 minutes DPS service desk further escalates and troubleshoots, implements ESC procedures, and participates in technology and management bridge calls.

45-60 minutes **Second stakeholder notification:**

DPS service desks sends an update to initial communications – includes additional details, resolution, or estimated time to resolution. *Subsequent communications follow every 60 minutes until resolution.*

DVS communications sends the notification within 15-30 minutes of first one.

DVS communications works with DPS service desk and the DPS Office of Communications to craft a more comprehensive message about what system is affected, what the problem may be, and, if possible, the anticipated length of the outage.

Delivery method:

- DVS staff sent via Outlook
- Deputy registrars and dealers via GovDelivery

Resolution	**Resolution notification to stakeholders:** Notification is sent after the resolution is found and services are confirmed as fully restored. DVS communications works with DPS service desk and the DPS Office of Communications to craft a resolution notification with root cause analysis, total impact, and any additional information regarding service outage or slowdown. Delivery method: • DVS staff sent via Outlook • Deputy registrars and dealers via GovDelivery

Proposed plan for post-release reporting on features and fixes to system stakeholders

Three items need to be included in communications about all future releases. The first item is to socialize the actual content of the release, making sure that stakeholders are aware of what is changing and that MNIT and DPS can answer any questions they may have about the release. The second item is to share a report once the UAT demonstration is finished, to ensure stakeholders know that the UAT demo is complete, and to provide any necessary information or feedback received from the process. The third and final item is a post-release follow-up, confirming whether or not live-in-field testing went well and what, if any, additional feedback MNIT and DPS received since the release went into the system.

Socialize release content

Once the ESC has determined and vetted the content of each release, all stakeholders will receive the itemized release list, along with highlighted priorities, before it goes live in the system. After the content is socialized, MNIT and DPS start the UAT process.

UAT report out

When MNIT and DPS get into the testing phase of each of the releases, the stakeholders will receive an updated report on the status of the UAT.

If there are significant issues during the UAT phase and as a result the release is postponed, the stakeholders will receive a follow-up notification that the release has been postponed. This notification will include the reason for postponement. When possible, the notification will include the rescheduled release date.

It can be difficult to identify this date quickly because the release will still be in the testing phase. MNIT and DPS will not deliver a release until the UAT team has worked out all the issues that made it a “show-stopper” and fixed them.

Post release reporting

Once a release has been deployed into the system and has had 3-5 business days to run, the stakeholders will receive a follow-up email either notifying them of the success of the release, or notifying them of any issues they may experience as a direct result of the release. If there is additional action or notification needed, the UAT team will follow up with all stakeholders.

Plan to create greater efficiencies and streamline title processing to reduce and minimize backlogs

As was noted in the April 30, 2018 report DVS continues to uses a multi-focused strategy to reduce and minimize backlogs including using overtime for DVS staff, employing seasonal employees, and contracting for temporary staff.

Additionally DVS has engaged with the Department of Administration's Office of Continuous Improvement team to review processes in order to identity improvements. Since the April 30, 2018 report the Continuous Improvement team has received and is reviewing data on title processing and the work queues. The team has also documented the work processes in mail handling, document imaging, title application review, retrieving paper documents not associated with a transaction, the triage process for reviewing and assessing defects and data fixes received from the deputy registrars. The purpose of documenting work processes is to identify points where efficiencies could be introduced. The work of the Continuous Improvement team is ongoing.

Staffing changes	Comments
Driver and Vehicles Services title and registration employees. (DVS title and registration employees have been working mandatory overtime since the summer of 2017 to address title turnover.)	Working mandatory overtime to address title backlog.
Dept. of Revenue seasonal employees (These are seasonal staff who the Dept. of Revenue employs during the tax season.)	DVS contracted for 28 temporary, seasonal employees to work on manufacturer certificate of origin (MCO) title transactions and Minnesota (MN) title transactions. These seasonal employees started again on June 4, 2018.
Ally Business Solutions, LLC (A St. Paul non-profit organization that match the skills and interests of people with disabilities to the needs of private business and government agencies.)	An average of 16 contracted employees work on manufacturer certificate of origin (MCO) title transactions each week.

Request for information (RFI)

The following companies responded to the April 30, 2018 RFI solicitation in the *State Registrar*.

These companies submitted responses to the RFI by the May 31, 2018 4:00 deadline:

- Business Information Systems (website: http://www2.bisonline.com/)
- Celtic Systems (website: https://www.celtic.bz/Hub)
- FAST Enterprises (website: https://www.fastenterprises.com/)

The summary of the responses and information received from qualified vendors will be submitted to the committee and the information technology auditor no later than August 1. 2018 as required by 2018 Minnesota Session Laws, Chapter 101, Section 2, Subd.5 (e).

MNLARS budget update

Provided below is the MNLARS budget for fiscal year 2018 and 2019. It should be noted that in the absence of additional funding, the state faces a number of serious concerns, including the inability to retain and recruit talent, address priority fixes and gaps in the system, fully move production from the mainframe, allow for needed maintenance, and hire sufficient staff to provide the level of oversight identified in other reports.

The budget is in a number of tables, including a Budget Summary (Table 1) and a special rider budget (Table 2). Please note that due to budget restrictions during FY 2018, the MNLARS project experienced a period of several months where spending was slowed due to ramp-down of the project and contractor uncertainty. As a result, some of the requested funding will likely be spent in Q1 2019, rather than as expected in Q4 2018.

Table 1 – budget summary

Table 1, the budget summary, includes a breakdown of revenues and costs rolled-up to a summary-level similar to that previously provided to the legislature as part of the full funding budget from the Governor's recommendations. It includes revenues, expenditures, encumbrances, and forecasted spend. "Expenditures" are monies paid subject to an invoice or expense incurred. "Encumbrances" are monies set aside for payment after an obligation for payment has been established, but no invoice has yet been approved or paid. "Forecasted spend" includes planned expenditures and encumbrances that are anticipated, but have yet to be either paid-out or set-aside.

Financial reporting for vehicle & driver 5/31/2018 (in thousands)	FY2018			FY2019
Revenues			**Total**	**Budget**
Special revenue	-	-	6,609	3,041
Carryforward	-	-	26,702	14,284
Receipts	-	-	1,900	1,900
Transfers in	-	-	8,000	8,000
Total revenue	-	-	43,211	27,226
Expenditures - Driver	**YTD spend**	**Encumbered & forecast**	**Total**	**Budget**
FAST contract	4,250	4,000	8,250	9,500
FAST DVS staff	-	-	-	832
MNIT Drivers staff	-	20	20	576
FAST contractors	382	453	835	1,095
Technology costs	87	595	682	1,874
Total driver	4,719	5,068	9,787	13,877
Expenditures - Vehicle	**YTD spend**	**Encumbered & forecast**	**Total**	**Budget**
Contractors	9,154	3,124	12,278	7,168
DVS staff	320	43	363	688
MNIT staff	2,275	251	2,527	2,431
Technology costs	881	2,843	3,724	2,814
Other spent	225	22	248	248
Total vehicle	12,855	6,284	19,139	13,349
Total driver and vehicle	$17,574	$11,352	$28,926	$27,226

Table 2 – special rider budget

Table 2, the special rider budget, contains an accounting of the use of fund provided under MN Laws 2018, ch. 101, including $7,051,000 for contracting to perform software development on the vehicle services component of MNLARS and $2,599,000 for technology costs. The numbers contained in this table are contained in the data provided in table 1, but are addressed separately here.

Special rider budget 5/31/2018 (in thousands)	**FY2018**				**FY2019**	**Total**
Rider	Budget	YTD spend	Encumbered & Forecast	Total	Budget	Total
Contracting	7,051	1,512	3,124	4,636	2,415	7,051
User authentication & access control management	100	-	17	17	83	100
Testing environment, hardware, server & data	20	-	5	5	15	20
Partial relocation of data center	650	-	650	650	-	650
Disaster recovery & preparedness	780	-	780	780	-	780
Contracted software review & software development	1,049	-	521	521	528	1,049
Total	$9,650	$1,512	$5,097	$6,609	$3,041	$9,650

FY 2018 Q4 spend for employees and contractors

Spend for MNIT and DPS employees in FY 2018 Q4 are identified below and contain staff charges allocated to the MNLARS project for each position, as well as an indication for each position of the number of dedicated staff and non-dedicated staff (those that spend part of their time supporting MNLARS, but not assigned to the project).

Table 3 – amount spent for MNIT employees in FY 2018 Q4

Position	Dedicated staff	Non-dedicated Staff	Q4 spend (in Thousands)
Managers/supervisors	1	-	23
Project managers/admin support	1	-	20
Technical/software architects	-	-	-
Software developers	6	1	90
Operations	10	4	268
Technical support	5	-	20
Separation payout (Q4)	-	-	11
Total	23	5	$432

Table 4 – amount spent for DPS employees in FY 2018 Q4

Position	Dedicated Staff	Non-Dedicated Staff	Q4 Spend (in Thousands)
Business Program Director	1	-	25
Business Management Analyst	1	-	15
Total	2	-	$41

Table 5 – amount spent (in thousands) for contractors in FY 2018 Q4

Spend for MNIT contractors in FY 2018 Q4 is identified below and contains the amount (in thousands) paid by the MNLARS project for each contractor. Each contractor may have one or more billed resources placed on the project or may be paid upon completion of deliverables without regard to the number of resources engaged.

Contractor	Amount spent (in thousands)
Ambient Consulting Solutions	-
American Association of Motor Vehicle	2
American Databank	0
Analysts International Corp	30
Charter Solutions Inc	223
Dahl Consulting	77
Edchunk Inc	-
Elegant Enterprise Wide Solutions Inc	53
Fast Enterprises LLC	-
Globalsource Info Tech Iii	-
Iceberg Tech Group	17
Integration Architects Inc	32
International Projects	174
Intertech Inc	25
Knowledge It A Cooperative	270
License Bureau Inc	-
Lighthouse Software Solutions	403
Logisolve LLC	50
Minnesota Management & Budget	-
Modis Inc	14
Polk R L & Co	35
Public Safety Dept	-
Sdk Technical Services	55
Software Engineering Services	65
Sogeti Usa	50
Sogeti Usa LLC	688
Supersonic	48
Systems Advantage Inc	109
Talent Software Services Inc	50
Trissential	-
Zinncorp Inc It Doctors	30
Total	**$2,499**