



MNLARS Project Audit

Findings Report

Dated: April 27, 2014

Minnesota Department of Public Safety

Licensing and Registration System

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EXECUTIVE SUMMARY

OVERVIEW

This document represents the result of the MNLARS project audit. This audit included an assessment of the current project effort, capturing both strengths and challenges of the project management and software development processes. The identified strengths should be preserved and leveraged as a foundation for improvement, while the challenges need to be overcome. This report also includes key recommendations for improving overall project capabilities as well as overcoming the existing project challenges.

THE RESULTS

IDENTIFIED STRENGTHS

The following key strengths were identified in this audit:

1. Business SME's who are extremely knowledgeable about the business processes and are dedicated and passionate about the project.
2. Hiring of new Business Analysts for process improvement and to support the project efforts.
3. Relationships between teams and team members are improving.
4. A solid governance structure and leadership team in place.
5. A strong technical support team, looking out for the business' interests.
6. A robust and well managed project budget and invoice process.
7. A sound external stakeholder communication plan.
8. A common desire by all team members to succeed and have this project a success.

COMMON THEMES

The following includes a list of common themes found during the audit through interviews and the results of the project management and software development Life Cycle assessments.

1. The project is not one team.
2. Incompatible goals and visions.
3. Unclear project communication and role expectations.
4. Culture of distrust between project teams and team members.
5. Vendor Business Analysts lack formal business analysis skills.
6. The Vendor is driving the project rather than the State Business.

RECOMMENDATIONS

The following recommendations are split into two categories. The "top recommendations" category contains the big heavy hitters that will take effort, commitment, time, and possibly

additional resources to implement. "Additional recommendations" contain other thoughts that although important, are not as critical and are smaller in scope.

TOP RECOMMENDATIONS

1. Improve business processes before automating them.
2. Speak in one voice, one vision.
3. Become one project team.
4. Provide strong Vendor oversight.
5. Improve elicitation and documentation of requirements.
6. Improve project communication.
7. Overcome a culture of distrust by bringing the project teams together.
8. Proactively ensure application, technical and operational security is not compromised.
9. Hire a branding and usability manager to oversee the User Interface look and feel.

ADDITIONAL RECOMMENDATIONS

1. Ask for Vendor references regarding their Scrum experience.
2. Develop UAT testing capacity.
3. Prepare Business SME's for Sprints.
4. Add an audit team member for next year's audit.
5. Determine clear project acceptance criteria.

PROJECT OVERVIEW

PROJECT BACKGROUND

OVERVIEW

The Minnesota Department of Public Safety Driver and Vehicle Services (DVS) Division touches the lives of millions of Minnesotans every year. Whether testing the skills of new drivers, ensuring the accurate collection of State revenue, or responding to customer concerns, how well DVS employees carry out these and other responsibilities reflects upon the quality of government service as a whole to those who use their services. Currently, DVS and its business partners rely on an increasingly fragile information technology (IT) system to support their efforts.

Governor Mark Dayton's initiative, "Better Government for a Better Minnesota," recognizes that government can make a positive difference in people's lives — but to do so, it cannot continue to do things the same old way. In order to fully achieve its mission of providing fair, accurate, secure, and timely service, DVS must change. The Minnesota Licensing and Registration System (MNLARS) is the system that will upgrade DVS operations to meet the changing needs and expectations of employees, business partners and customers.

A HISTORICAL PERSPECTIVE

The aging mainframe system used by DVS, although robust in its day, has limped along well beyond its intended capability. It is a system that perpetuates outdated, inefficient, paper-driven processes and is difficult to modify without major programming efforts. More importantly, it puts at risk the security, confidentiality, integrity and availability of both public and non-public data; the ability of DVS to meet State and federal mandates; and the ability to provide effective support for law enforcement and other DVS partners.

For the past few years DVS has engaged in an effort to replace its legacy system. On April 25, 2012, after a rigorous procurement process, DVS contracted with Hewlett-Packard State and Local Enterprise Services, Inc. (HP) to design, build, and implement a new IT system. MNLARS will replace the 30-year-old mainframe with a more secure, modern, responsive, flexible and reliable system.

PROJECT APPROACH

Initially MNLARS was to be developed and implemented utilizing an incremental and iterative approach. Four core releases were identified to minimize the risks commonly associated with a "big bang" implementation. Each release was to have several increments or work streams that were further broken down into more manageable functionality in order to optimize DVS and HP resources, create a rich development environment that was adaptive and feedback-driven, and allowed the work on each to be conducted in parallel. Each release was to build upon functionality deployed in previous releases which would grow in complexity as the components of the release required greater interaction with existing databases, interfaces and systems.

In addition, a risk mitigation measure was established in the RFP to ensure executable code level deliverables would be delivered to the State technical, testing and business teams every six weeks. However from the start of the project, the development approach moved to a more

incremental waterfall approach with requirements expected to be finalized and signed off before the main development effort began and the executable level code was delivered only towards the end of each release.

To overcome the downsides of an incremental waterfall approach, the project has moved to an Agile approach using Scrum to try to deliver business value in consistent short intervals. While Release 1 used an incremental waterfall like approach, Releases 2-4 will be developed using a Scrum framework, delivering executable code in short 2 to 3 week sprints. Although Scrum provides executable code every 2 to 3 weeks, implementation of the code into production will still occur within four key releases.

- Release 1: System framework, vehicle permits and identity access management (Feb 2014 - Implemented)
- Release 2: Dealer licensing and inspection and finance (October 2014)
- Release 3: Drivers licensing, driver compliance and scheduling (September 2015)
- Release 4: Vehicle title and registration and retire legacy system (June 2016)

AUDIT OVERVIEW

AUDIT GOALS

The goal of the overall project audit includes not only an assessment of the current project effort for the MNLARS project, but also includes recommendations for improving overall project capabilities. The focus of this audit is on project improvement rather than a fault finding exercise.

SUCCESS CRITERIA

Per a conversation with Mary Ellison, the MNLARS Project Sponsor, this audit will be deemed successful if there are practical and tangible recommendations that the State can begin to put in place to improve project performance.

ENVIRONMENT

This audit took place from January 1, 2014 to March 31, 2014. During this time the State and HP Vendor conducted a “lesson’s learned” session on the MNLARS project in early January 2014. The lessons learned findings revealed a number of concerns with the analysis /requirements effort, some architecturally significant components of the system, and the software development effort itself (given the first release was six months late). Consequently, both parties decided to change the software development approach in February for releases 2-4 (Release 1 development continued during this time frame). Two Sprints (0 and 1) were conducted in February 2014 for finance function to ascertain Scrum’s feasibility and usefulness as a development approach on this project. Given the successful results of Sprints 0 and 1 of the Finance Scrum pilot; both parties decided in March 2014 that all remaining development on the project for releases 2-4 would be conducted using a Scrum approach.

BEST PRACTICES

This audit used the following standards on which to assess the MNLARS project:

- PMBOK (Project Management Institute’s Body of Knowledge) which provides a best practices framework for project management.
- BABOK (International Institute of Business Analysis’ Body of Knowledge) which provides a best practice framework for business analysis efforts.

To a lesser extent, the audit used SEI’s CMMI (Capability Maturity Model) providing guidance for developing or improving processes in order to meet the business goals of an organization in addition to various standards and guidelines for software, architectural, database, and security development.

AUDIT SCOPE

This audit addresses only the past incremental-iterative development approach from the development of the Statement of Work (SOW) in early 2012 to the implementation of Release 1 in March 2014. The analysis effort on release 2-3 was also included in this audit.

It does not specifically address the new Scrum development effort which started in February 2014, although there are a few suggestions in this document regarding the benefits and pitfalls related to moving to a Scrum development approach. It also does not include the selection or implementation efforts of any recommendations prompted by this audit.

IN SCOPE AUDIT AREAS

- Project management processes
- Software Development Life Cycle (SDLC) processes

OUT OF SCOPE AUDIT AREAS

- Vendor management
- Contract fulfillment
- Change management (people side of change)
- Architectural assessment
- Security assessment
- Scrum software development assessment

AUDIT STRUCTURE

AUDIT TEAM

ADVISORY AUDIT GROUP

The following personnel provided an advisory & oversight review of this audit.

- Deputy Commissioner & MNLARS Sponsor: Mary Ellison
- Assistant Commissioner MN.IT: Jesse Oman
- DPS CIO: Paul Meekin, MBA
- MNLARS Technology Project Director: Semyon Axelrod

CORE AUDIT TEAM

The core audit team supported the audit efforts and provided resources as needed for this audit.

- MNLARS Technology Project Director: Semyon Axelrod
- MNLARS Technical Project Supervisor: Patrick Obele, PMP
- MNLARS Senior Technical Project Manager: Patty Hunter, MMA, PMP
- Senior Audit Consultant: Susan Heidorn, Ed.D, PMP, CBAP

AUDIT ACTIVITIES

This audit assessment includes the following activities:

- Review and update the State of Minnesota's Project Audit Checklist.
- Explore and analyze relevant project correspondence and deliverables using the State of Minnesota's Project Audit Checklist.
- Conduct one-on-one interviews with a select group of State business, technical and Vendor team members in order to further analyze and evaluate the project's health.
- Conduct a detailed document analysis on select project documentation found on the HP/State shared SharePoint site.

- Compare the document analysis and interview results with best practices in the field of project management, business analysis, and software development. Identify project strengths and best practices within the MNLARS project, as well as areas for improvement.
- Create a draft of the project audit report.
- Review the project audit report with a select group of MLARS Advisory Committee representatives.
- Finalize the project audit report, making any changes agreed upon during the review meetings.
- Create a PowerPoint presentation of key findings and recommendations.
- Present key findings and recommendations to the MNLAR Steering Committee and/or MNLARS Advisory Board.

AUDIT DELIVERABLES

The following deliverables have been identified by project phase.

- Findings and Recommendations Report (this document).
- Completed Project Management and Software Development Life Cycle Checklist Assessments.
- PowerPoint Presentation to the Steering Committee and/or the MNLARS Advisory Committee (MAC).

AUDIT APPROACH

INTERVIEW APPROACH

All interview notes were captured in the interview questionnaire template (located in the Appendix) in addition to the name of the interviewee, date and time of the interview, project role and organization. Interviewee responses were held in confidence and no response was assigned by name. Given the raw data, common themes between the responses were identified and captured in this document as "Common Themes".

INTERVIEW STRUCTURE

Forty MNLARS team members were interviewed for this assessment. The interview questions were structured to identify what is already going well on the MNLARS project as well as identifying areas for improvement and challenges or barriers to overcome. The identified strengths can be preserved and leveraged as a foundation for improvement, while the areas for improvement can be used to determine the steps needed to improve project performance. Potential barriers that may prohibit the MNLARS project from moving forward were also identified.

PARTICIPATING INTERVIEWEES

A list of people who were interviewed for this audit can be found in Appendix A.

INTERVIEW QUESTIONS

A list of interview questions can be found in Appendix B.

DOCUMENT ANALYSIS APPROACH

DOCUMENT ANALYSIS DEFINED

Document analysis is a technique used to glean information about the current environment. Analyzing the existing documentation provides a good understanding of the project, as well as clues as to who needs to be interviewed, data that needs to be captured, business rules that need to be enforced, processes that need to be followed and deliverables promised to the State.

PROJECT DOCUMENTATION REVIEWED

Document analysis was conducted on the project artifacts found on the HP/State SharePoint site. The auditor was unable to access any project artifacts on the HP Vendor SharePoint Site or any of the Vendor tools such as ALM that hold much of the project documentation. This imposes a risk on this audit since only the State documentation and Vendor shared documentation could be reviewed.

Documents found on the SharePoint site were compared to the Statement of Work (SOW) to ensure coverage, as well as all project documentation and project artifacts such as models, meeting notes, etc.

SUMMARY OF KEY FINDINGS

The following is a list of key strengths identified through this audit that should be leveraged as the project moves forward. The list of strengths is followed by collective themes around the challenges that have impacted the MNLARS project to date that will need to be addressed in the near future to enhance project performance. For more detail regarding these strengths or challenges refer to the detailed audit findings in Appendix C, the project management audit checklist in Appendix F and the SDLC audit checklist in Appendix G.

TOP 8 STRENGTHS TO BE LEVERAGED

1. There are dedicated, committed and passionate SMEs who are extremely knowledgeable about the business processes. The business has also done an excellent job at balancing the high demand of business SMEs needed for project effort while successfully maintaining day to day operations and getting business staff ready for the change to a new system. Keep this group enthusiastic and moving forward to ensure their continued participation and support of the project.
2. The hiring of new Business Analysts to focus on business analysis activities and business process improvement is necessary to ensure the software meets the needs of the business.
3. The relationships between the Vendor and business; Vendor and State leadership; and Vendor and State technical team members, architectural and testing staff are improving. Continue to nurture and develop these relationships for a high performing team.
4. A solid governance structure and a strong leadership team are in place. The governance structure includes a strong Project Sponsor, a Steering Committee and the MNLARS Advisory Committee, all of which provide guidance and oversight to the MNLARS project. In addition the project has a solid leadership team (Mary Ellison, Paul Meekin and Andy Tonkovich) who continue to drive the project forward. If any of these people leave the team a new team must be rebuilt from the foundation of the existing team.
5. There is a strong technical support team in place including a number of experienced, certified project managers, a MNLARS Information Manager, a MN.IT Liaison, and an infrastructure and technical team. The State's infrastructure and technical team members are very experienced and extremely knowledgeable in their area of expertise. Utilize their skills to their fullest to ensure project success.
6. There is a robust and well managed project budget and invoicing process in place that should continue to be followed and managed throughout the project.
7. A robust external stakeholder communication plan has been developed and executed by the MNLARS Information Manager. The key is to keep the MNLARS Information Manager in the loop regarding the project status.
8. There is a common drive and desire by all project stakeholders to do anything that is needed to ensure this project is a success. Leverage this determination and aspiration to enhance the relationships between the project teams and to focus the project effort.

COMMON THEMES

THEME 1: NOT ONE TEAM

Currently the Vendor has a project team and the State has their project teams (Technical team, Business team, Infrastructure team, and MN.IT Central Team). Although it sounds good that we are “all in this together” and “we are all one team” evidence points to the contrary.

EVIDENCE:

1. There are 2 project SharePoint Sites (one is a shared site used by both the State and the Vendor, while another site is owned by the Vendor for their own project documentation). The State project team members are not allowed access to see what project documentation is on the Vendor’s SharePoint site.
2. The Vendor shares only the information they want to provide to the State and determines when they are willing to share that information. When information is shared, it is often difficult to access, for example,
 - There is no trending information on defects or detailed information on each defect, even though this information was requested by the State multiple times.
 - Although the Vendor provides a listing of defects, the State does not have the ability to look at the defects independently in the Vendor’s ALM tool to know what defects have been fixed or not fixed.
 - Although the State receives detailed information on the Change Requests (CRs) during the CCB meetings and in the weekly reports, the change request log does not house all the details on all change requests. To obtain the details about a specific change request, the State must first find the weekly report they were reported in and then find the change request in question.
 - Software and architectural design documents are often not available to State.
3. The first Vendor Project Manager had refused to work and collaborate with the State’s Technical Project Manager, even when asked by the State. The Vendor’s interim Project Manager was amenable to the idea, but the meetings between the Vendor and State’s Technical Project Manager never occurred.
4. The Vendor has publically expressed a desire to work closely with the State’ Technical Team members, but in reality the Vendor often keeps the Technical Team at arm’s length. Although the relationship and information sharing is improving between the State’s Technical team and the Vendor team, it still has a long way to go for the team to become a team of one rather than a team of many.
5. The Vendor uses tools that capture project information not available to State project team, even though the State has requested access multiple times.
6. From project initiation until recently, when issues arose during architectural and data meetings between the Vendor and State’s Technologists, there often was no feedback received from the Vendor on outstanding questions and a number of issues were found closed without providing the State Technology team with answers or information they requested.

7. The Vendor does not utilize the State's email and scheduling system for ease of connection and scheduling. Although the Vendor was reminded multiple times to use the State's communication infrastructure and SOW states this as a requirement; the Vendor flatly refuses to adhere to this contractual obligation.

THEME 2: INCOMPATIBLE GOALS AND VISIONS

Although both the Vendor, State leadership team, and most of the project team members could articulate the project vision and goals with clarity, the disparate interpretations of that vision became apparent through the interviews.

EVIDENCE:

1. While a number of interviewees reported that they are not sure the State business and technical teams actually have the same vision and goals for the project, the disconnects in the State's project visions may be superseded by the Vendor's bottom line, the project timeline and the constraints of using the Vendor's core product as a foundation for software development.
2. The project is a fixed bid. While the State may feel that eliminates the majority of financial risk, it may also impact the State by leaving the Vendor less likely to accommodate anything new or different.
3. The RFP asserts that the State will provide governance as well as technical and architectural oversight for the project, yet the Vendor has not allowed this to happen.
4. There appears to be a disconnect between the State and the Vendor's understanding of how existing software code is used in the development of the State's application. The State's perspective is that the Vendor can use the existing code if helpful, but otherwise it is custom developed software fit for purpose. The Vendor's perspective appears to be that the existing software will be used and it will only be modified when all other options to meet the State's needs are exhausted (which formed the basis of their approach to requirements analysis, project management and the fixed bid). These views are not compatible.
5. The State and Vendor architectural team members have incompatible architectural goals for the project. The Vendor wants to focus on what the business needs today and this formed the basis for their bid. The State's Technical Team wants to ensure the system is flexible, maintainable, and scalable for future needs of the business and a fast response time that meets business expectations and the SOW.
6. The Vendor appears to believe that the State's Technical team members were hired to find fault with the application and architecture, while the State's Technical team believes they are providing oversight and trying to catch any issues that arise now when changes still can be made rather than invest in modifications at a later date.

THEME 3: UNCLEAR PROJECT COMMUNICATION & ROLE EXPECTATIONS

Communication is the heart and soul of any project and is often the cause of project success as well as project failure. Below is a listing of communication and role expectation challenges that must be overcome to ensure project success.

EVIDENCE:

1. The project organization chart is out-of-date and there is no formal internal project communication plan for the State's project team.

2. Project roles and responsibilities on the project are not clearly documented in one place.
3. It has been reported by a number of the project team interviewees that they don't always receive the information they need to do their job.
4. Human resource changes in Vendor or State project team members have not always been communicated to others on the project team.
5. Interviewees have different versions of various project messages. A few examples include: when would the Scrum sessions begin, what functions would be covered in the Sprints, who is involved with each Sprint and what was decided on outstanding architectural issues.
6. There is no common project repository for the MNLARS project. The Vendor has their own SharePoint site, the State houses a shared Vendor/State project SharePoint site, there is a TeamSpace site that houses older MNLARS project documentation in addition to shared and personal drives where past and current project documentation also reside.
7. Project status reports are captured in a number of venues (Excel, SharePoint Site, etc.) and there is no overall project dashboard that summaries the overall project status.
8. There are mixed security role expectations. The State expects HP to provide a Security Architect/engineer to help them comply with NIST Security Guidelines, while the Vendor feels that most of the security work complying with NIST is the State's responsibility. In addition, the Vendor only has a Security Auditor who fills in for a Security Architect at times. Full time security resources were never in the Vendor's project plan or budget.

THEME 4: CULTURE OF DISTRUST BETWEEN PROJECT TEAMS AND TEAM MEMBERS

Culture is often very hard to change, but if it is ignored, it can be a hidden and significant barrier to moving forward with project improvements. Although trust is improving between the technical and business team members and the Vendor and the State, the seeds of distrust are still in the air.

EVIDENCE:

1. A few interviewees seem to think that many of the project team members are defensive and spend too much time justifying what they are doing rather than working together to make their project a success.
2. Some business people are reportedly intimidated in the presence of the technical staff.
3. Technical team members have reported that they feel their concerns are not heard or listened to by the business or the Vendor.
4. There is a perception from the business that technical team members don't care about the business or the long term success of the business, but are only in this project for resume-building.
5. Some interviewees have stated that when the technologists question the business for clarification purposes or when they are trying to help find the best solution they are questioning the integrity of the business SMEs to know their business.
6. Some thought leaders within the business still harbor some angst against the technical team members for the past deeds of previous technologists.
7. It has been reported that the Vendor does a run around to State Business if they don't like what the State Technology Team has to say.

8. It has been reported that the approach people take at the Change Control Board (CCB) meetings is rather adversarial. Issues often arise around what is a "change" or not a "change" which is often due to interpretation. The other factor that proliferates the "us vs them" attitude is that the Vendor sits on one side of the table and the State on the other side inadvertently creating an adversarial atmosphere.
9. Even though the project team members have voiced a positive attitude about the project as a whole, there is still an undeniable negative undercurrent in the project. There is a tendency for team members to talk negatively about each other either in meetings or behind each other's backs which is counterproductive to the project. The Vendor staff members sit next to the State technical staff and it is easy to hear each other in the cubes, including when one group is speaking poorly of the other.

THEME 5: VENDOR BUSINESS ANALYSTS LACK FORMAL BUSINESS ANALYSIS SKILLS

Although the Business Analysts are very well versed in the work of the DMV, it appears that they are not trained in formal business analysis; nor do they follow best practice.

EVIDENCE:

1. Business Analysts are not certified or experienced based on best practices.
2. Business Analysts are to be neutral (provide suggestions, not decisions). The Vendor Business Analysts tended to be more directive and lead the business to accept the "out of the box" solution that the Vendor has reportedly developed; stating to the business "here is what you bought" or "this is the way the system works."
3. Business analysis is all about communication, written and oral. Unfortunately, the requirements artifacts are very difficult to read. In addition, business rules are poorly written, some of the business rules are not business rules, and non-functional requirements are mislabeled as functional requirements.
4. There is no non-functional requirements list overall for the software application to ensure all non-functional requirements are covered in development and there are no requirements that negate each other.
5. There is very little meeting management. Requirement sessions do not have a detailed agenda, stated purpose, outcomes, or next steps. There is no confirmation of key concepts captured for each session such as decisions made, new requirements, or business rules. There are no handouts for SMEs to review ahead of time or use to get caught up on a missing session such as past session notes, detailed agenda, list of requirements, use cases, and wireframes, etc.
6. Business Analysts do not ensure everyone is on the same page. When a SME states, "I don't know where we are or what we are talking about" an answer to their question by the Business Analyst would be preferable to just ignoring the question.
7. The discussions in the requirements sessions appear to focus only on the current process and not future improved processes.

THEME 6: THE VENDOR IS DRIVING THE PROJECT RATHER THAN THE STATE BUSINESS

To be successful, the State must provide oversight to the MNLARS project. Giving the Vendor carte blanche to ensure the project is a success is not wise. Although the Technology Team has been trying to provide oversight, the Vendor skillfully leverages their relationship with the State

Business to overcome any obstacles it sees in accepting any oversight or critique. In the end, project responsibility still lies with the State. There are a number of areas that raise red flags that indicate the State does not have control over this project.

EVIDENCE:

1. The Vendor's project documentation, artifacts and tools are not accessible by the State, or if accessible only on a limited basis. It is difficult for the State to provide oversight on the project when they only have visibility to a small subset of the project information and artifacts at their disposal.
2. The Vendor does not provide information or insight into the application defects. The Vendor only provides defect information on a high level and does not provide any tracking or trending information for the State to determine if the defects are lessening or increasing. Without insight into the defects, it is hard to ensure that the defects will be resolved before the application goes into production.
3. The Vendor tries to prevent any architectural and technical oversight by running around the Technical Team and going to the State Business for decisions. The RFP asserts that the State will provide governance as well as technical and architectural oversight for the project.
4. The Vendor does not always deliver the documentation as Stated in the SOW or listed in various project plans. Project documentation has been really difficult to reconcile since there is no master list of documentation the State should expect to receive and or dates/phases of when they should receive it. There have been times when deliverables are marked complete on the project schedule but are never received by the State such as the VDD document and release notes. There have also been times when the Vendor has changed their deliverable documentation without notifying the State (e.g. the State received Knowledge Transfer Sheets rather than a Knowledge Transfer Grid without instructions, information, or forewarning).
5. There is no apparent branding and usability efforts. With no one assigned to do branding or review the usability of the user interfaces, it is hard to imagine that all the User Interfaces, developed by different developers will have the same look and feel, navigation, and edits and message throughout the system.
6. The Vendor refuses to provide conceptual models (domain or enterprise models on the business, data, application, and technical architecture; business process maps, class diagrams, State transition diagrams, use case diagrams, or scope diagrams, etc.). Integration is critical, particularly now that the development effort have moved to a Scrum approach, so conceptual or logical models that provide a big picture on how all the components fit together is critical.

RECOMMENDATIONS

OVERVIEW

The following recommendations are split into two categories. The “top recommendations” category contains the big heavy hitters that will take effort, commitment, time, and possibly additional resources to implement. “Additional recommendations” contain other thoughts that although important, are not as critical and are smaller in scope.

TOP RECOMMENDATIONS

1. **Improve Business Processes Before Automating Them.** Although it is too late for this project, it may be helpful for other State projects. It is really difficult to modify or improve processes on the fly and way too time consuming by the time the project progresses to the development stage. It is best practice to improve and optimize business processes first before capturing core requirements and beginning software development.
2. **Speak in One Voice, One Vision.** The State has taken great strides in implementing this recommendation to date, but it needs to continue throughout the project. The State’s Business and Technical teams need to continue to partner together and act as one voice to the Vendor. In addition, the State should ensure the Vendor does not do an end run around the technical team or railroad the business side into accepting or approving artifacts that are not acceptable from a technical perspective. All parties need to leverage their expertise to create a successful project.
3. **Become One Project Team.** Currently the Vendor has a project team and the State has their project teams. Although it sounds good that we are “all in this together” and “we are all one team”, evidence points to the contrary as seen in the “Common Themes” section of this report. To be successful, the Vendor needs to begin sharing all their project documentation, allow the State full access to all tools that house project information and allow the technical team to provide oversight. Both teams need to sit together as one group as opposed to the Vendor sitting across the table from the State project team members. The Vendor should use the same email system for ease of scheduling and communication; all teams should report to one Program Manager.
 - a) Require the Vendor to use State’s Outlook Email System. Scheduling and communicating with the Vendor takes an inordinate amount of time because the Vendor does not use the State’s Outlook email system. Although this seems like a small thing, adopting this recommendation can significantly reduce the number of hours required to communicate or schedule meetings. For example this auditor spent over 20 hours, going back and forth to schedule interviews with 14 Vendor team members for this audit. That doesn’t count the other MNLARS team members’ time. It would also encourage and reinforce the “one project team” idea.
4. **Provide Strong Vendor Oversight.** Per the RFP, the State is responsible for project and technical oversight. While the Vendor provided their PMO to provide oversight to their project efforts, they did not capture the State’s oversight in the SOW. Ultimately, the State is responsible and accountable for the success or failure of this project and since they will have to maintain the system in the future, it is in the State’s best interest to provide strong

oversight of the Vendor's work effort and received deliverables. The following are a number of suggestions to put in place.

- b) Hire a Full Time Program Manager. Mary Ellison, the Project Sponsor is currently fulfilling this role. As she retires this year, it is a good time to hire a full time Program Manager who reports directly to the Project Sponsor with the appropriate authority. Ultimately the buck stops with the State on this project. Therefore it makes sense for the State to actively manage the entire MNLARS project. The Program Manager would have a hard line reporting relationship with the Vendor's Project Manager, the ScrumMaster of ScrumMasters, and Sr. Technical Project Manager. They would also partner with the Business and Technical Project Directors. The program manager should be well versed in both traditional and Scrum development methodologies.
- c) Hire a ScrumMaster of ScrumMasters that Reports to the State Program Manager. This role oversees all Scrum teams. Ensure the consultant is a State consultant and not a Vendor consultant or the State will lose the ability to provide project oversight again.
- d) Provide Technical Oversight. Allow the technical team to provide the architectural and technical oversight that is clearly spelled out in the RFP. There should be an agreement to this oversight with the Vendor outlined in an addendum in the SOW. Since the State will own the code, it is paramount that they understand how the system is architecturally and technical built and if it is not to State's standards, the gaps need to be prioritized and addressed.
- e) Vendor needs to Provide Conceptual Models. Conceptual models enhance individual's understanding of the representative system, facilitate efficient conveyance of system details between stakeholders, provide a point of reference for system designers to extract system specifications and document the system for future reference (and support) and provide a venue for collaboration. Conceptual models are also critical in the Scrum environment to provide a big picture on how all the Sprints fit together. Perhaps the State and Vendor technical teams could work together to create the conceptual and enterprise models needed for understanding of the system.
- f) Conduct an Architectural Audit. This audit did not cover the architectural aspects of the project except at a very high level. There are many architectural concerns the State's Technologists identified that need to be addressed by the Vendor to ensure quality system performance and that the application can be easily maintained and enhanced.
- g) Ensure one State Technologist or Representative is in each Scrum Sprint. At the end of the day the State will need to support this software application. Although the project does call for Knowledge Transfer at the end of the project, it makes more sense to involve those people who will be managing the system and developing future enhancements to be a participant in the sessions so they know what is going on and can begin to build knowledge capacity on the software, architecture, and data.
- h) Track and Monitor Vendor Commitments. Commitments should be tracked and promptly followed up when they are not met. There have been too many meetings where promises are made for the Vendor to look into a concern and there is no follow-up.

- i) Obtain Access to the Tools Used by the Vendor to Track Project Information. The Vendor should provide access to any tools they use to create or manage project artifacts.
 - j) Obtain a Clear List of Deliverables from the Vendor. The State should require the Vendor to create a master list of all documentation the State will receive from the Vendor and when to expect it. The State should not have to review the entire Vendor's project documentation and the project schedule for this information. This list should also be kept updated in case the Vendor decides to change the deliverable.
 - k) Reset Vendor's Project Management Role. In moving to Scrum the role of the Project Manager significantly changes. The Vendor needs to set expectations with the State on the revised PM role, interactions expected from the Project Manager, and how the State's Technical Project Manager will work with the Vendor's Project Manager.
- 5. Improve Elicitation and Documentation of Requirements.** Requirements are critical to a project. Without good, well understood requirements, the project is off to a rocky start and the product won't meet the needs of the business.
- a) Document and trace all requirements. Ensure that all the requirements get documented in use case or in a user story that is understandable to all stakeholders. All requirements should add business value and be testable.
 - b) Capture all Non-Functional Requirements. Ensure all non-functional requirements are captured either in a user story, use case, or separate document/spreadsheet.
 - c) Adhere to good meeting management. If still eliciting requirements through sessions or meetings, follow good meeting management. E.g. Have an agenda, purpose, and outcome; document the results of the meeting and review the results before the end of the session.
 - d) Capture and document all business rules. Business rules are a constraint on how the business is run. They are created by the business, written in business language, and only the business can change their rules. Although they are system agnostic, they must be addressed in the software application as needed.
 - e) Ensure the business analysts do not lead the outcome. Make sure the business analysts are at the sessions to elicit requirements and to provide an understanding of the core Vendor product, providing guidance only as necessary and not direction.
- 6. Improve Project Communication.** Communication is at the heart of any project and can be a contributing factor to the success or failure of a project. Here are a few suggestions to improve the communication efforts.
- a) Create a New Project Communication Plan that encompasses the entire Project. This new communication plan should combine both Vendor and State communication plans. Remember to consider the move to a Scrum when creating the communication plan. Some meetings will no longer be needed, while items like the Sprint showcases will be added.
 - b) Send Clear Messages. Communication can get misconstrued, misinterpreted by others, or changed through the rumor mill. It is suggested that before the meeting ends, the key messages from the meeting are reviewed to make sure everyone is on the same page. These same messages should also follow through to the meeting minutes.

- c) Create one Project Repository. Have one repository for all project information. Also improve the SharePoint site so it is more intuitive and has a glossary so team members can easily access project information.
 - d) Create a Robust Status Report with a Dashboard. There should be a quick way to see the overall health of the project and statuses provide by both the State and Vendor. Current Status reports are kept in multiple documents and require much time to read. The dashboard would quickly communicate the overall health of the program and individual projects; detail would be provided should the consumer want or need additional information.
 - e) Add a Program/Project Administrator: Provide additional resource to manage the invoicing, status reports and other communication facets of the project. Then the Senior Technical Project Manager could focus on high level project management around schedule, meetings, updating project plans (risk, assumptions, action items, etc.) and ensuring the work gets done and the Program Manager could work on the strategic aspects of the project (Refer to Appendix D for more information on the Program Manager role)
 - f) Provide a Strong Communications Support Infrastructure: Projects occur at a fast pace and communication is the key to a successful project. Not having the communication technology needed can hinder a project. Each meeting room should have a conference phone and ideally, there would be at least a few rooms with projectors or monitors for video conferencing. Seeing the person on the other end is an invaluable piece of communication.
 - g) Make sure the Right Team Members are at the Project Meetings. It is easy to invite the core project team members whose work is directly impacted by the meeting agenda, but also remember to invite those ancillary project team members that need hear the information such as the Information Manager, the Security Manger, the Test Lead, and Quality Assurance to the meetings.
 - h) Communicate Project Team Changes. Make sure all project team members, Vendor and State, know who is coming on and off the project. Communication did not always happen in the past given that emails from both sides are going to people who are no longer on the project.
 - i) Document Clear Team Roles and Responsibilities. Update the project organization chart, define project roles and responsibilities in one document, update project contact lists in SharePoint, etc.
- 7. Overcome a culture of distrust by bringing the project teams together.** Stronger teams and trust make for a more successful project. Here are a couple of suggestions to consider.
- a) Work to overcome the subcultures within the organization. Bring the State Technical and Business teams together for some team development, project celebrations, and perhaps even provide MBTI or Insights personality assessments for each team member and conduct a review session that would enhance communication between team members.
 - b) Create a positive atmosphere. Work on creating a positive atmosphere. Suggest a peer-to-peer recognition program where the “atta-persons” submission is posted on the

shared site or read during program/project meetings or social gatherings between the teams to celebrate project successes and appreciations.

8. **Proactively ensure Application, Technical and Operational Security is not compromised.** Security is critical to any software application these days. The results of security violations can be seen in the paper daily. In order to prevent being a statistic, consider the following suggestions:
 - a) Align Security Work Efforts. Work with the Vendor, MNLARS Security Manager, and MN.IT Central to ensure that all parties agree to the security roles and responsibilities of each party in regards to meeting MNLARS security requirements.
 - b) Conduct a Security Audit. This audit did not cover the security aspects of the project except at a very high level. Because there were a number of security concerns brought up by the Vendor's Security Auditor on the MNLARS project, it would be beneficial for the State to conduct a security audit that would assess to see if NIST and other applicable security standards are being followed and that all security concerns are addressed. Being proactive regarding security is much better than being reactive when an actual security violation occurs.
 - c) Hire a Full Time Security Manager or Security Oversight Vendor. Hire a full time Security Manager or Security Oversight Vendor for MNLARS to work closely with the Vendor and MN.IT Security Officers. This position was laid out in the RFP, but for some reason has not yet been fulfilled.
 - d) Require the Vendor to add a Security Tester and Security Architect to the Project. Per the Vendor's Security Auditor, security seems to be low concern of the Vendor. There is not a Security Tester or Architect on the project to date.
 - e) Ensure Security around interfaces and data access by non-human actors has been fully addressed. There needs to be an interconnection agreement for all their human parties accessing the MNLARS information in order to limit security vulnerabilities. There also needs to be an IAM component for non-human actors so the State can accurately identify where the request originates and if the originating system has authorization to the data.
9. **Hire a Branding and Usability Manager to Oversee the User Interface's Look and Feel.** No UI branding or usability efforts have been seen to date that support a uniformed and professional look and feel of the User Interfaces. According to the SOW: The public-facing Website must adhere to the Style Guide and Branding Book as applicable. The fallout of a poorly designed interface can cause users to abandon the site due to poor design and leave a bad impression of the agency. Internally, a poorly designed user interface can also decrease productivity and increase training needs.

ADDITIONAL RECOMMENDATIONS

The following recommendations are somewhat smaller in scope, but would also help the project move forward in a successful manner.

1. **Ask for Vendor References.** Per the Vendor, the Vendor's DMV practice has not used a Scrum development approach in other States. The Vendor is providing Scrum expertise both from their other practices as well as bringing in experts in the field. However, it may be prudent for the State to give due diligence to the process and ask the Vendor to provide

client references for any large scale Scrum projects (can be non DVS projects) the Vendor has undertaken to get a sense of their competency in Scrum development.

2. **Develop the UAT Testing Capacity.** The current UAT staff did a good job of tackling UAT testing with very little knowledge. To make the UAT testing effort much more successful the State may want to provide either experienced UAT testers to write test cases or provide training to all the UAT testers on writing test cases, what to look for etc. In addition, there should be a UAT tester included in every Scrum team to ensure understanding of the requirements, and the overall integrity and relevance of the test cases, wireframes and verbiage regarding the edit and messaging functionality. A UAT Test Plan would also be appropriate and help focus the UAT effort.
3. **Prepare Business SMEs for Sprints.** A unified approach is suggested by having the SMEs prepare for the requirements sessions or Sprints ahead of time. In so doing, they will come to the meetings prepared with their requirements, business process and related decisions in hand. The SMEs must understand the business process and be able to tell the difference between the process steps that must be retained in the future state and the process steps that are just happenstance or reflective of a constraint of the old system. They will also need to prioritize what functions are critical and which are not critical to the project at this time.
4. **Add an Audit Team Member for Next Year's Audit.** Since the State must audit any projects over \$10,000,000 every year, it is recommended having a team of 2 to 3 auditors to review the project next year. The benefits of this include faster audit feedback time and the addition of having different perspectives represented.
5. **Determine Clear Project Acceptance Criteria.** Acceptance criteria represent a specific and defined list of conditions that must be met before a project has been considered completed and the project deliverables accepted by the approvers. While there are very good metrics set around security and other non-functional requirements, it would be advisable to identify clear project metrics around product scope, budget and schedule tolerances, product quality (number or level of defects acceptable) or business metrics around customer satisfaction, improved productivity, and business benefits.

ACTIONS TAKEN TO DATE

The following is a list of actions the State has already taken in moving this project forward.

IMPROVE BUSINESS PROCESSES BEFORE AUTOMATING THEM

Business process improvement was not initially included in the project scope, but has since been added by a decision made by the Steering Committee. The State now has a number of Business Process Analysts and Business Continuity Analysts who focus on process improvement.

SPEAK IN ONE VOICE, ONE VISION

The CIO and Technical Project Director have been working closely with the Business Project Director to identify how the Technology Department can be of service to the Business.

The Project Sponsor has been working with both the State business and technical leadership to get everyone on the same page through frequent meetings and conversations.

BECOME ONE PROJECT TEAM

The Vendor leadership, State business and technical leadership teams came together to participate in an overall project "lessons learned" session using an outside neutral facilitator who utilized an appreciative inquiry (AI) technique. The technique focuses on leveraging the strengths of the organization as well as talks about what would be ideal moving forward. It moves the focus to a positive stance and away from a negative or blaming perspective.

The Vendor has provided a few State team members with access to their ALM tool which houses the project requirements.

The Scrum sessions provide an opportunity for both the Vendor and State to work together in one room on one project function.

Combined architectural meetings with the Vendor and State project team member to discuss the top 10 outstanding architectural issues from the State's perspective have begun. It appears that everyone has good intentions and they are working to resolve the outstanding architectural issues and questions.

PROVIDE STRONG VENDOR OVERSIGHT

- Mary Ellison, the Project Sponsor, has stepped up to oversee MNLARS project and provide vendor management. As a result, the Vendor has become much more accountable for their actions.
- The State will work with the Vendor to ensure the upgrade; backup/restore schedule is feasible and accurate.
- Architectural concerns are in the process of being addressed with the Vendor including actively managing the risks of the architecture with the Vendor, ensuring the Vendor does refactoring and creates a fully automated regression. In addition some architectural facets will be written into a user story for development, although not all architectural concerns can be addresses through a user story.
- The Vendor appointed a new person in charge of invoicing in late 2013 who works with the State's Sr. Technical Project Manager to ensure all invoices are appropriate and meets the terms of the contract. This process in now working very well and all payment are based on actual receipt of approved deliverables.
- The Vendor has been making resource changes from the management level to the project level, ensuring the right skills are in place for a successful project. For example: Andy Tonkovich, the District Manager, is full time on this account for now, a new Account Manager with more DMV experience replaced the existing Account Manager, a new Practice Delivery Manager was hired to replace the existing Practice Delivery Manager, a new Project Manager with Scrum experience has been hired, as well as experienced Scrum Masters when the project moved to a Scrum methodology.
- The DPS CIO has been working with the Business Project Director to identify additional user stories that focus on the architectural components of the software system to ensure they are addressed in the application.

IMPROVE ELICITATION AND DOCUMENTATION OF REQUIREMENTS.

Due to the ineffective business analysis effort, the project has moved to a Scrum development approach to ensure the State's requirements get into the product.

IMPROVE PROJECT COMMUNICATION

- There is now more direction from MN.IT Central regarding their service offerings, roles, and responsibilities they will assume in supporting MNLARS project.
- The MAC meetings ensure all the key participants are in the same room at the same time, hearing the same thing.
- Paul Meekin has been working hard to improve communications between the Vendor and the State leadership team.
- Andy Tonkovich's (HP District Manager) full time presence on the project has helped propel a stuck project to move forward and has provided a more responsive Vendor leadership team. He has also worked on getting the Vendor and State technical teams on the same page.
- The Vendor's PMO Lead has improved communication within the Vendor team.

OVERCOME A CULTURE OF DISTRUST BY BRINGING THE PROJECT TEAMS TOGETHER

The MNLARS State leadership team members have become more collaborative, committed, engaged, and responsive to each other and the needs of the project.

PROACTIVELY ENSURE APPLICATION, TECHNICAL AND OPERATIONAL SECURITY IS NOT COMPROMISED.

- The State MNLARS Security Manager, the Vendor's Security Architect and MN.IT Security have been working together to determine how to best move forward with the State's security effort.
- There is a State RFP in process to be approved to bring in a Security Oversight Vendor.

HIRE A BRANDING AND USABILITY MANGER TO OVERSEE THE USER INTERFACE LOOK AND FEEL.

No action to date.

ASK FOR VENDOR REFERENCES REGARDING THEIR SCRUM EXPERIENCE.

No action to date.

DEVELOP UAT TESTING CAPACITY.

The State has done some ad hoc training with the testers. More training needs to be done, in addition to the creation of a UAT test plan for the next effort if appropriate.

PREPARE BUSINESS SME'S FOR SPRINTS.

No action to date.

ADD AN AUDIT TEAM MEMBER FOR NEXT YEAR'S AUDIT.

No action to date.

DETERMINE CLEAR PROJECT ACCEPTANCE CRITERIA.

No action to date.

OUTSTANDING RISKS

1. The retirement of the Project Sponsor this year could be a huge impact on the project. It may be difficult to find someone to fill her shoes in providing leadership to the MNLARS project, holding the Vendor accountable, and getting the business and technical sides of the business to work together for the success of the project.

2. Andy's full time presence has been helpful on the project. In the future, he will be moving on to other projects. His replacement may not have the decision making authority needed for this project.

MNLARS Project Audit

Appendices

Appendix A: List of Audit Interviewees

Appendix B: Interview Questions

Appendix C: Detailed Audit Findings by Project Area

Appendix D: Potential Program Structure

Appendix E: Scrum Advantages & Disadvantages

Appendix F: Project Management Audit Checklist

Appendix G: SDLC Audit Checklist

APPENDIX A. LIST OF AUDIT INTERVIEWEES

DVS & MN.IT INTERVIEWEES

| <u>NAME</u> | <u>TITLE</u> |
|-----------------|---|
| Mary Ellison | Deputy Commissioner / MNLAR's Project Sponsor |
| Paul Meekin | DPS CIO |
| Semyon Axelrod | MNLARS Technical Project Director |
| Patrick Obele | MNLARS Technical Project Supervisor |
| Sheryl Yanagi | Systems Analyst |
| Patty Hunter | MNLARS Project Manager |
| Bill French | Infrastructure Lead |
| Ellen Friedman | Lead Technical Architect |
| Susan DeFreitas | Data Migration |
| Ash Durham | Technical Architect |
| Jim Oolman | Systems Analyst |
| Vishrut Sharma | Data Architect |
| Gao Vang | Testing |
| Marc Klein | CISO MN.IT Security |
| Nicole Tinberg | MNIT Liaison |
| Joyce Simon | Project Budget Analyst |

DVS BUSINESS INTERVIEWEES

| <u>NAME</u> | <u>TITLE</u> |
|------------------|---|
| Pat McCormack | DVS Director |
| Larry Ollila | MNLARS Business Project Director / Vehicle Registration |
| Rayah Weinke | MNLARS Project Consultant |
| Chuck Jaeger | Business Continuity SME |
| Kathy Bormann | Driver Services Business Functional Manager |
| Joan Kopcinski | Driver Services Director |
| Tami Bartholomew | Admin Services Director |
| Dawn Olson | Support Services Director |
| Tom Henderson | Vehicle Services Director |
| Becky Mechtel | MNLARS Communication |

HP VENDOR INTERVIEWEES

| <u>NAME</u> | <u>MNLARS PROJECT FUNCTION</u> |
|-------------------------|--------------------------------|
| Andy Tonkovich | District Manager |
| Scott Horrocks | Practice Delivery Leader |
| Bob (Robert) Smith | Account Manager |
| Bob (Robert) Digiovanni | Acting Project Manager |
| Jonathan Snow | PMO Lead |
| Enrique Aguilar | Scheduling Manager |
| Johannah Jaros | BA Lead |
| Chris Barbay | Lead Architect |
| Bryce Wessel | Infrastructure |
| Joyce Breitman | Release Management |
| Valerie Cooper | Test Lead |
| Carl Greenwood | HP Security |
| Vasu Thothotri | Infrastructure Lead |
| Cindy Pearson | Invoicing |

APPENDIX B. INTERVIEW QUESTIONS

CONTEXT QUESTIONS

1. How long have you worked on the MNLARS project?
2. What is your role and what are your responsibilities on the MNLARS project?

COMMUNICATION/INTERACTION QUESTIONS

1. How do you interface or interact with State MNLARS staff / with HP staff?
2. Where or from whom do you get most of your information from (work direction, decisions, info about the project?)
3. What information don't you get, but would find helpful to doing your job? (Documents, etc.)
4. Who makes decisions regarding your work products?
5. What has been successful /challenge with those interactions?
6. What would be ideal in regards to your interactions with the State / HP?

PROJECT QUESTIONS

1. Given your experience on the project as a whole, what are the strengths and/or successes of this project to date?
2. What challenges do you see that must be overcome to make this project successful?
3. If you think about what you would like in an ideal project, in your eyes what would be happening? What would it look like?
4. What do you think it would take to get to the ideal state?
5. What barriers do you see that would prevent the team in moving to the ideal?
6. What are the consequences of not moving to the ideal state?
7. What role do you see yourself playing in supporting the ideal state?

CLOSING QUESTION

1. Is there anything else I should know about or anything else you want to comment on?

APPENDIX C. DETAILED AUDIT FINDINGS BY PROJECT AREA

The following findings were based on 40 individual interviews with the State's business and technical team members, Vendor executives and team leads, as well as document analysis of project artifacts found on HP/State SharePoint site, and the results of the Project Management and Software Development Life Cycle Audit assessments. The findings were broken down by the following eight areas:

1. Pre-project work
2. Project governance
3. Project management
4. SDLC (Software Development Life Cycle)
5. Security
6. Architecture / infrastructure
7. Relationships
8. Organizational culture

Each area covers the project related strengths of the organizations, as well as the challenges that remain and must be overcome to realize a high performing team and to increase project performance.

1. PRE-PROJECT WORK

Pre-project work occurs before the project officially begins. For this audit, pre-project work includes Vendor contracting, the development of a Request for Proposal (RFP), Statement of Work (SOW), and the initial project budget.

STRENGTHS

1. The State created a well-developed RFP, outlining how the State wanted to work with the Vendor and the core requirements that needed to be met by the Vendor's project management processes, software development processes, functional and non-functional (quality of service) requirements, architectural and design constraints, and operation and support requirements.
2. Both the State and the Vendor worked together as a team to build the Statement of Work (SOW). The Vendor reported that it was a very collaborative planning effort. The State reviewed and approved the final SOW.
3. The project is driven by the business needs of the organization and business value to the customers.
4. There is one common vision by the MNLARS project leadership that focuses on replacing an old legacy system, which is long past its prime, by creating a flexible architecture that is easy to enhance while ensuring the security of customer data. All members of the leadership

team, as well as their direct reports, are able to articulate the core goals of the project. The MNLARS Communication Manager has also kept the vision alive in her messages to the DPS staff.

5. There is a solid budget for the project, balancing the project expenses with the temporary revenue streams for the duration of the project.
6. The State brought in a separate Vendor for a nine month discovery effort to elicit, define and document the core requirements needed to support the business processes. This information provided input into the RFP.
7. Although organizational readiness was out of scope for this audit, many interviewees suggested that the State has a strong organizational readiness and organizational change structure in place. The leadership team (business and technical) has been working hard with the business supervisors to talk about how to manage the current and future changes going on in their departments throughout this project and how to lead their staff in this new environment.

CHALLENGES

1. Although the MNLARS leadership is able to articulate the vision with clarity, there still seems to be some mixed perceptions within the various stakeholders and project team members. A number of interviewees reported that they are not sure the business and technical teams actually have the same vision and goals for the project. This may stem from mistrust and subcultural differences between the business and technical teams (refer to the Organizational Culture section for more information).
2. Although the Vendor can clearly articulate the project vision, they are also on the clock to get the project done on time and on or under budget given that it is fixed bid project. So the project vision may be superseded by the Vendor's bottom line, the project timeline, and the constraints of using their core product as a foundation for the software.
3. A robust process improvement effort was not conducted before the project began. Per some of the interviewees, the thought at the time was to just make a flexible system then do process improvement during the software development process or after implementation if the need arose. Software development is not an optimal time for process improvement given that the project scope must be baselined for change control, in addition to the tight timelines and budget constraints of the project. It would have served DVS better to start looking at process improvement first, capture the future needs of the new processes and then create a RFP. The Scrum approach may help somewhat on process improvement, but given the development focuses only on small increments of functionality any process improvements will be at a detailed functional level and very few improvements will be realized on a business process level.
4. There are no clear acceptance criteria metrics or measures from a project or business perspective. Acceptance criteria represent a specific and defined list of conditions that must be met before a project is considered complete and the project deliverables accepted by the approvers. While there are very good metrics set around security and other non-functional requirements, there are no clear project metrics around product scope, budget and schedule tolerances, product quality (number or level of defects acceptable) or business metrics around customer satisfaction, improved productivity, and business benefits. This could create difficulty for final product sign-off and warranty if both Vendor and the State

have different interpretations of when the product is considered “done” and what should be acceptable.

5. The project is a fixed bid. While the State may feel that minimizes their financial risks and puts the risk on the Vendor, it may also impact the State by leaving the Vendor less likely to accommodate anything new or different. It has also caused the Vendor to push the State into accomplishing the reviews and sign-offs in a short amount of time to lessen the impact to the project schedule and not allow for any technical changes or input into the process. This may be counter to the goal the State has regarding a scalable and flexible system and the ability to change the requirements to adopt to the current business needs on the fly. Moving to a Scrum approach may provide the ability to make a change in requirements in the moment, but the short development timeframes still won't allow much adjustment to the requirements, nor does it allow for how all these small functional increments will add up to a robust and flexible system.

2. PROJECT GOVERNANCE

Project governance provides the management framework upon which project decisions are made. A strong governance structure is a critical element of any large project. The purpose of a project governance structure is to provide a clear message on the impacts and benefits of the project, improve project oversight and predictability of project outcomes, clarify key project roles and responsibilities, set stakeholder expectations, ensure strategic alignment of projects, resource the project appropriately, and resolve escalated risks and issues.

STRENGTHS

1. The State has a strong project governance structure. There is a Steering Committee in place which addresses key project issues and problems that are escalated, oversees and governs the enterprise aspects of the project and has final decision authority on budget and scope. The Steering Committee meets once a month and consists of various DPS (Department of Public Service) representatives plus a high-level MN.IT Central representative. There is also a MNLARS Advisory Committee (MAC) that meets weekly, facilitated by the State's Technical Project Manager. The MAC group consists of business directors and technical team representatives who provide oversight to the day-to-day operational aspects of the project. In the past, the interviewees stated that people were getting their information second hand. Today, the MAC meetings ensure all the key participants are in the same room at the same time, hearing the same thing.
2. In addition to being the Project Sponsor, Mary Ellison stepped up to oversee the MNLARS project. All the executive leadership who were interviewed for this audit felt that her efforts have been crucial in getting the project on the right track. It was reported that her professional, cordial and calm demeanor has been inspirational to all on this project. She was able to develop strong relationships between the State business and technical leaders, as well as strengthening the relationship with the Vendor's leadership. As a result, the Vendor has become much more accountable for their actions and the MNLARS State leadership team members have become more collaborative, committed, engaged, and responsive to each other and the needs of the project.
3. Paul Meekin has also been mentioned in the interviews as another person on the MNLARS leadership team who has been working hard to create one project team with improved communications between the Vendor and the State leadership team. His professional, positive approach is very much appreciated by MNLARS leadership team and the Vendor.

4. Andy Tonkovich's (HP District Manager) full time presence on the project has helped propel a stuck project to move forward and has provided a more open Vendor leadership team. He has also worked on getting the Vendor and State technical teams on the same page.
5. Vendor employees who were interviewed for this audit have also stated that their Vendor leadership team for this project has been exceptionally strong, in particular, the PMO lead who helped the project move forward in a more positive manner.

CHALLENGES

1. The retirement of the Project Sponsor this year could be a huge impact on the project. It may be difficult to find someone who can provide strong leadership to the MNLARS project, as well as hold the Vendor accountable, and ensure the business and technical teams continue to work together for the success of the project.
2. The RFP asserts that the State will provide governance as well as technical and architectural oversight for the project. Although the project governance is strong, the technical and architecture team responsibilities outlined in the RFP for collaborating with the prime Vendor to refine all technical plans and design, approve technical deliverables, and coordinate project efforts with exiting State systems and technologies has not occurred on this project. The Vendor's SOW covers governance as outline in their EDGE methodology and does not include the State's right for technical oversight, nor has the Vendor allowed this oversight. Given the State will "own" the code and will be required to manage and enhance it in the future, there should be an agreement to this oversight and an effort for the technical teams to work together on the project.
3. Currently Vendor management is conducted by the Project Sponsor on the project. While the Project Sponsor has been doing a great job of Vendor management there is no formal Vendor management plan. The Project Sponsor is set to retire this year and there will be a void in managing a very strong Vendor.
4. Per the interviewees, the Vendor accountability could be stronger on this project regarding deadlines and the Vendor's non-responsiveness to outstanding architectural and technical questions from the State. Meetings occur between the Vendor and State project team members to discuss issues and while this is a good start, there often is no follow through by the Vendor to respond to the assigned action items or outstanding questions. It appears that outstanding questions are just ignored or they are closed out before they are really closed.
5. It would appear that even though the State and Vendor leadership may have the same vision and direction, this information may not be getting filtered down to the team leads. A number of respondents stated that not all the team leads appear aligned to the vision and direction of the project efforts.

3. PROJECT MANAGEMENT

PROJECT STRUCTURE & SUPPORT

STRENGTHS

1. The PMO office and current PMO Lead, Jonathan Snow, has received lots of kudos from the Vendor's project team leads. The project structure that the PMO Lead brought to the Vendor's project team leads was reportedly extremely helpful including on-boarding and

off-boarding, project templates, SDLC deliverable templates, risk review meetings, lessons learned, change control processes and the creation of a SharePoint Site.

2. The Vendor has a very strong and well developed project management methodology called EDGE that covers all phases of project management and software development Life Cycle based on best practices in the industry (SEI's CMMI, ISO, PMI, Lean, 6 Sigma). The project plans from the Vendor are clear, detailed, and well documented.
3. The Vendor conducts a quarterly lessons learned with all Vendor project team members in an effort to identify improvement areas. Sometimes lessons learned are conducted even more frequently, depending on the project phase. Because the lessons learned were not shared with the auditor, it is unknown if actions are taken from the lessons learned.
4. Early in the project the Vendor had a full time Project Manager on site. It was helpful to have a "go to" person on site to ask questions about the project. After the full time Vendor Project Manager quit, there was an interim Project Manager who was not always on site. Since this audit, another full time Project Manager has been assigned to the project.
5. The State has a full time Sr. Technical Project Manager, a Business Project Director, a Technical Project Director and a PMO office in place to support the project. The State's Technical Project Manager and Supervisor are both PMI certified as are the Vendor's Project Managers.

CHALLENGES

1. The Project Managers are not working together as a team. The State does not often have access to the Vendor's Project Manager and in the past, the Vendor's Project Manager refused to work with the State's Technical Project Manager. During this audit the Vendor did not have a full time Project Manager on site to work as a team. A new Vendor Project Manager just joined the team, so there is little information on how this new relationship will work.
2. There is very little technical communication infrastructure in place to support virtual teams or team members (e.g. there are very few conference phones or networks with display monitors in the conference rooms that could support meeting software such as Live Meeting, Go to Meeting, or AnyMeeting). The Vendor's project team members are not local and they are only at the State for a limited amount of time during a month. It is difficult to communicate and develop a shared understanding without face-to-face interaction.

PROJECT SCOPE, SCHEDULE & BUDGET STRENGTHS

STRENGTHS

1. The project schedule is well documented and updated weekly with team lead information by the Schedule Manager. Unfortunately not all the team members have access to Microsoft Project so they can see the schedule. In lieu of MS Project access the Sr. Technical Project Manager reviews the schedule with the team on a weekly basis.
2. The current State's Senior Technical Project Manager (Patty Hunter) and the Project Budget Analyst (Joyce Simon) are doing an excellent at managing the project budget and ensuring that the State is not paying for deliverables that have not been received. Prior to these two team members coming on board and formally managing the invoicing process, the State almost paid over one million dollars for hardware and software not yet delivered to the State. This has now been corrected and processes are in place to ensure no payments are

made until the receipt of deliverables have been confirmed and approved by State personnel.

3. The State's Technical Team has been on schedule or ahead of schedule in meeting all their project deliverables including their part of the data conversion and migration, interface development, and infrastructure development.

CHALLENGES

1. Initially the Vendor's invoice did not match the contract or the deliverables created. Invoices were created automatically off the contract on the due date, yet at times the Vendor was only 40% done with the deliverable when they invoiced for the work. In the past, some invoices did not match the consultant's time sheet or meet the contract terms; nor did the Vendor send all documentation in advance of the invoice.
2. The Vendor underestimated the budget and project schedule of the first project release covering Identity Access Management (IAM). This has put the project behind schedule about six months. This may influence the rest of the project and make the Vendor focus even more on delivering a project within time and budget targets versus quality.
3. The Vendor does not always deliver the documentation as stated in the SOW or listed in various project plans. Project documentation has been really difficult to reconcile since there is no master list of documentation the State should expect to receive and or dates/phases of when they should receive it. There have been times when deliverables are marked complete on the schedule but are never received by the State such as the VDD (Version Description Document which defines the steps required, validation steps, backup and recovery steps, and contact information required to promote the release throughout the SDLC environments) and release notes. The Vendor also changed some of their deliverable documentation without notifying the State (e.g. the State received Knowledge Transfer Sheets rather than a Knowledge Transfer Grid without instructions, information or forewarning).

PROJECT TEAM, RESOURCES & STAKEHOLDERS

STRENGTHS

1. The State Project Team members have matured as a team. There is a better feel for the overall direction of the project. In the beginning there was not a strong sense of purpose or commitment to each other on the team. Technology and business are coming together as one team. State and Vendor project team members are working well with their counterparts on the project.
2. It has been reported from both from the Vendor and technical team members that the Senior Technical Project Manager has been easy to work with and very responsive. Having the ability to get hold of the Senior Technical Project Manager when needed and ease of communication has been really good.
3. The business has done an excellent job at still running day-to-day operations given the high demand for business Subject Matter Experts (SMEs) on this project. SMEs may have to attend any number of requirements sessions which are generally scheduled for a half day, but some SMEs may have to be in 2 sessions in one day or be full time on the Scrum team. The business side has made a lot of sacrifices for this project by providing staff to the project, which can take up to 40% of their time away from working in their program areas.

4. The Vendor has been making resource changes from the management level to the project level, ensuring the right skills are in place for a successful project. For example: Andy Tonkovich, the District Manager, is full time on this account for now, a new Account Manager with more DMV experience replaced the existing Account Manager, a new Practice Delivery Manager was hired to replace the existing Practice Delivery Manager, a new Project Manager with Scrum experience has been hired, as well as experienced Scrum Masters when the project moved to a Scrum methodology.

CHALLENGES

1. Roles and responsibilities on the project are not documented in one place; nor is there a current project organizational chart. Team members have stated that they could use a little more direction regarding who is responsible for what on the project and their authority when working with the Vendor. There also needs to be a refinement of project roles, responsibilities, and expectations now that the project is moving to a Scrum approach.
2. Decision-making authority was still a mystery to most of the Project Team members as they frequently voice confusion regarding "who gets to decide what". Decisions are generally made via consensus at the State. There needs to be a point where the staff has authority to make process decisions. Currently, there is too much frustration when the decision-making process gets the project bogged down or spinning in various directions due to this misunderstanding. This dilemma will be addressed in the Scrum efforts since the decisions remain with the product owner and Sprint teams. However, the rest of the project that still follows an incremental development approach will need more definition around who gets to make what decisions. There also needs to be a greater understanding with what decisions are made by the Vendor and those made by the State as well as what roles are the State's and what roles are the Vendor's.

PROJECT COMMUNICATIONS

STRENGTHS

1. The Project Sponsor has done a great job keeping the State business and technical leadership as well as the Vendor leadership in the know and on message.
2. The interviewees found that the project meetings that were conducted were very helpful to the team members. The "All Staff" project team meetings the Vendor and the State have with their respective teams have been very beneficial in passing on information associated with the overall project status. Stream Lead meetings were an invaluable source of information sharing between team members, and the Scrum showcases have been well received.
3. The MNLARS Information Officer has been effective at creating a robust communication plan for all business stakeholders, DVS employees, and external customers that is also well executed. All parties are kept informed about the status of the MNLARS project and any change management issues through the DVS newsletter and special announcements. The MNLARS Information Officer and DVS Director have also been doing a good job at organizational change management communication, communicating organizational values and working on internal training efforts for the business.

CHALLENGES

1. Changes in Vendor staff have not always been communicated to the project team. There have been times where the project team members have tried to connect with their HP counterpart or someone else on the team, only to find out, after numerous attempts, this person no longer works for the Vendor organization. This also happens when the Vendor is not notified when State people leave the project. E.g. there are still numerous emails going to a State project team member who has not been in the organization since December 2013.
2. It has been reported by some of the project team interviewees that they are not receiving the communication they need to do their job. For example, the Infrastructure Lead was not notified in advance of the decision to move to Scrum when his team needed to know how to support the Scrum teams from an infrastructure point of view (e.g., how many servers would be needed). The MNLARS Information Officer and Test Lead/QA reportedly were not notified when decisions or changes were made to the project that impacted their work and the Security Architects reportedly have not been invited to some of the conversations that impact security.
3. It is difficult to keep the communication message consistent. There are numerous communication channels on this project and it seems that although the project team is getting better at asking questions and knowing what to look for, there are still communication miscues and not everyone knowing the same story (e.g., there were different versions of what came out of the combined lessons learned effort led by Paul Meekin and the Architectural meetings with the Vendor).
4. There is no common project repository for the MNLARS project. The Vendor has a SharePoint site, the State has the Vendor/State shared SharePoint site, a TeamSpace site, in addition to shared and personal drives where past and current project documentation reside. In addition, it is difficult to find things on the SharePoint site since there is no glossary or outline to help team members find project documentation and not all folders are intuitively labeled.
5. Status reporting could be improved. There is an executive dash board in the status report created by the Vendor that provides stoplight status to milestones, but there is not an overall project dash board. In addition, deliverables and milestones can move from green to red, without going through yellow. Generally that means there is no one keeping close enough tabs on the overall project schedule. The Vendor was also not as transparent with the issues when the schedule for Release 1 went off course. Interviewees said they would like to see a detailed status report that just talks about what the State is doing on the project and milestones that are independent of Vendor. The current status report has tabs for State project status, but it doesn't provide much project information. *(NOTE: There are State status reports but they are captured under weekly status reports in the shared HP/State SharePoint Site. It is unclear if everyone knows where to find these reports. The State's status notes captured in the Vendor's status report in Excel seem to disappear after a time.)*
6. It has been reported that the approach people take at the Change Control Board (CCB) meetings are rather adversarial. The meetings seem to proliferate "us vs them" environment and "change" has become a four letter word. Issues often arise around what is a change or not a change which is often due to interpretation. Another factor that

proliferates the “us vs them” attitude is that the Vendor sits on one side of the table and the State on the other which inadvertently creates an adversarial atmosphere.

7. The Vendor’s project documentation, artifacts, and tools are not accessible by the State, or if accessible only on a limited basis. It is difficult for the State to provide oversight on the project when they only have visibility to a small subset of the project information and artifacts at their disposal. *Per the RFP: Any assumptions made during the creation of the Project Management Plan, including any of the sub-plans, must be documented and shared with the State. The Prime Vendor will use the State’s existing SharePoint risk, issue, and change tracker to track project and development risks and issues that are not system defects and potential changes to the project scope. The Prime Vendor will be responsible for documenting, tracking, and managing the resolution of all risks and issues related to the project.* That mandate did not get carried over in the SOW.
8. The project’s organization chart is out of date, there is no formal project communication plan for the State’s project team and no stakeholder analysis has been conducted around roles, responsibilities, authority levels, and decision rights for the MNLARS State team.

4. SOFTWARE DEVELOPMENT AUDIT FINDINGS

ANALYSIS / REQUIREMENTS

The resulting audit of the analysis /requirements process was derived from the auditor sitting in multiple requirements sessions over a two month time frame, reviewing countless requirements documents and through interviews with the Vendor and State team members.

STRENGTHS

1. MNLARS business has hired new Business Analyst’s (BAs) to help support the requirements effort and process improvement.
2. The Business SME’s participating in the requirements sessions know the business processes really well and the Vendor’s BAs are well versed on the business processes of the DMV. Some of Vendor’s BAs had previously worked at a DMV in another State so they could share their stories, thoughts, or suggestions about business processes or logistics.
3. Although the business should have conducted a business process improvement effort before working on system requirements, the Business Project Director is still doing a good job at challenging the SME’s to think about the future, what could be, how the work can be streamlined to provide consistent expectations.
4. A few of the Vendor’s BAs are very good at listening to the business, preparing for the sessions and asking good questions. Sessions that went well had a clear purpose, moved through agenda, kept the conversation focused, and helped the business prioritize functionality and were good at providing suggestions/options. Overall, the business side thought the business analysis effort was going well.
5. The Vendor provided backup Business Analysts for each functional area, so each requirements session had two Business Analysts in attendance to hear the needs of the business.
6. Having a facilitator manage the room while the Business Analysts focused on eliciting the requirements worked well. The facilitators ensured all the participants signed in, had requisite materials available for the session, took high level notes and captured parking lot

items, and ensured the support technology was working (e.g. conference phone, computer connections to the Vendor, etc.).

CHALLENGES

1. There is no big picture view or diagram of how all the use cases fit together or fit into the business processes. Each requirement session only focused on the nuances of one small use case. Often the participant's looked confused, not knowing the focus of the use case or how this use case fit into the entire process. One of the participants asked, "Why are we discussing the same information again with a new Business Analyst"? Responses to some of participants' questions included, "We will discuss that topic at another session", and "That topic had already been discussed as part of xyz use case." It would have been helpful to have a diagram or product roadmap on how all these use cases fit together and mark which use case had been defined and which use cases were not defined. If some topics had been discussed already, it would have been helpful to provide that information to the current session attendees regarding the outcomes of the previous session. A scope diagram or use case diagram showing which actors interacted with which use cases would have also been helpful.
2. Another challenge regarding the requirements effort was people leaving the project and new people coming onboard the project. When new stakeholders or Business Analysts came on board everything had to be repeated from square one. There was no collateral to read to get them up to speed. *(Note: The State Technical Team spent over a year developing BUCs, Business Architecture model, actor models, transition diagrams, etc., to help the vendor understand the business needs. None of these artifacts appear to have been utilized by the vendor.)*
3. No one was in charge of detailed session notes. The facilitators captured high level notes, the agenda, and parking lot items, and the two Business Analysts in the room captured their own notes. There was no comprehensive meeting notes participants could review at the end of the session, nor were key points (new requirements, business rules or decisions) reviewed at the end of each session to ensure understanding and accuracy before the requirements were sent to the business participants for final approval. Key requirements were stated to be often missed and not captured by the Business Analysts.
4. It did not appear that materials were prepared or handed out to the SMEs before the session so they had time to process the information and come with decisions or get more information from others on the team who were not in the session. Previous session notes, a list of requirements, sample wireframes, activity diagrams, etc. should have been sent out ahead of time so the Stakeholders could review of existing documentation before each session. Then the sessions could summarize what was heard to date, and present a final recommendation. Final adjustments could be made to the document before the formal Work Product Reviews (WPRs) were sent out for approval.
5. Some of the Business Analysts (not all) seemed to lead the SME's to the Vendor's core product functionality, rather than listening and incorporating the functions desired by the business. It is the job of the Business Analyst to remain neutral and listen to the business first, then to make suggestions if a better option may be advisable but unknown to the SME. It is not their role to say "yes" or "no" or "this is what our product does". There was a frustration many times from participants that the Vendor's Business Analysts were not listening or being respectful of the SMEs' expertise on Minnesota Statutes.

6. Some analysts were virtually located which made communication much more difficult.
7. The requirements session appeared unstructured. There was only a high level agenda to refer to and a number of analysts (not all) were not prepared for their sessions. They had not read any support materials the State provided prior to the session, and they did not appear to have their questions ready or a detailed agenda prepared for the session. Questions and discussion appeared to be in just "wing it" mode. If questions were prepared, they did not appear to be organized or sequenced so the stakeholder could easily follow the thought processes and topic.
8. A number of Business Analysts were too abstract and did not help the SMEs explore their requirements or provide a business understanding to their questions. A BA would ask a question such as "What are your business customer types" and the business stakeholders did not know what information was really needed in order to respond to the question.
9. The WPR (Work Product Review) process had a number of challenges. For example, some of the comments made by the Technologists were not included in the final response to the Vendor; a week was not enough time to read and review all the WPRs sent out by the Vendor (particularly since some of the use cases were so poorly written), and WPRs were not available on the SharePoint site for everyone to access (Note: The WPRs were sent out to the respective viewers but it would have been easier to have them accessible on the project repository for future reference and accessibility by others.)
10. The Vendor's System Use Cases were often very poorly written and difficult to read (e.g. one had to move to multiple pages to see the entire process, business rules were separated from the use case steps that needed to invoke that business rule, business rules were not consistently or correctly labeled (some business rules were really requirements), and actors did not have unique role names. Use cases were developed as a communication tool for the BAs and Technologists to speak to the business in an understandable way using business language to make sure everyone understood the requirements in the same way. If the requirements documentation is poorly written and not easily understood by the business, the process has failed.
11. The State did not have access to ALM, a tool which houses all the requirements, use cases and traceability until recently, and then only a limited read only access was granted. ALM was a tool that was to be handed off to the State for future use, but there seemed to be some hesitancy at providing access to the tool before the end of the project by the Vendor.
12. Non-functional requirements were mixed up with functional requirements and it appeared that non-functional requirements, which are the most often forgotten requirements, are a second thought and not an equal partner with functional requirements. Functional requirements are also labeled incorrectly as non-functional requirements and there is not a separate overall listing of non-functional requirements for the project.

APPLICATION DESIGN & BUILD

The auditor had more open access to the State's technical personnel, processes and artifacts than to the Vendor's personnel, processes, and artifacts. Thus, the results of this audit are limited to the personnel interviewed and the artifacts available to the auditor.

STRENGTHS

1. The Vendor has a talented group of technologists who are knowledgeable and capable of doing the right thing. However, it has also been reported that they need to learn to challenge their leadership and processes more when things don't make sense and best practices are not followed.
2. The State technical team has very experienced and qualified personnel who are passionate about what they do and who are committed to the success of the project.
3. The State and Vendor data modelers and architectural team members have built strong connections with each other and work well together.

CHALLENGES

1. There is an absence of conceptual models (domain or enterprise models: business, data, application, and technical architecture, business process maps, class diagrams, state transition diagrams, use case diagrams, scope diagrams, etc.) from the Vendor. Integration is critical, particularly now that the development effort has moved to a Scrum approach, so conceptual or logical models that provide a big picture of how all the components fit together would be helpful.
2. On the surface the views and feedback of the State Technologists appear to be well received by the Vendor but in the end it appears that the Vendor does not respond to any of the issues that were raised in the joint meetings. There are no responding corrective actions to the raised issues or an explanation about why the concerns were not addressed.
3. The Vendor was not fully prepared for the difficulty of developing an Identity and Access Management system (IAM) using the Oracle Identity and Access Management Suite components and slow to respond to its complexity. The Vendor reported that the configuration and setup of IAM was more difficult than they anticipated and that IAM was not an area of expertise for the Vendor.
4. Designs received from the Vendor appear poorly written or generated from existing code rather than providing the State with conceptual designs. There also seems to be very little usability understanding given the artifacts that are shared with the State's technology team. Most of the design artifacts and code (existing or new) are not available to the State for review. This is contrary to the conditions laid out to the Vendor in the RFP that states the State will have technical oversight of the Vendor. In addition the State will have to support the application once the warranty period has been satisfied so it would prudent to have more information upfront then at the end of the project.
5. There appears to be a disconnect between the State and the Vendor's understanding of how existing software code is used in the development of the State's application. The State's perspective is that the Vendor can use the existing code if helpful, but otherwise it is custom software. The Vendor's perspective appears to be that the existing software will be used and it will only be modified where necessary to meet the State's needs (which formed the basis of their fixed bid). These views are not compatible.
6. The various development, test, and production environments have been known to be out of sync and at different versions throughout the process.

DATA CONVERSION & INTERFACE DEVELOPMENT

STRENGTHS

1. The State's technical development and legacy support teams are very strong. The team members are very knowledgeable and competent.

CHALLENGES

1. It has been reported that it is difficult to get business to make decisions about their data.
2. It does not appear that the Vendor's user interface designs include usability best practice, adherence to State branding guidelines, or have a common look and feel.

TESTING (SYSTEM AND UAT)

Unit, integration and systems testing are the responsibility of the Vendor. The State is responsible for UAT testing. However, because of the large number of defects found in the Release 1 application, the UAT testers also conducted system (functional) testing.

STRENGTHS

1. The Vendor supported the UAT testers through testing. The Vendor Lead Tester helped the State UAT test team write test cases, trained them in testing and helped them create an Excel spreadsheet to report testing results. Daily meetings with all testers were convened to determine what test cases passed and failed. Everyone worked together on next steps to keep the project moving forward.
2. The Vendor's testers and the State UAT testers developed a very strong relationship with each other.
3. A functional test plan and performance test plan are detailed and in place. There is also an individual functional test specification document for Release 1.

CHALLENGES

1. UAT morphed into functional testing due to the inordinate number of defects found in the initial code for release 1. As a result, the UAT testers had to become proficient in functional system testing as well as UAT testing
2. There was no State UAT test plan in place to guide the UAT testers for release 1.
3. There was not enough time allocated for GUI or browser testing, edits and messages testing or any ad hoc UAT testing for release 1.
4. Testers did not have access to the wireframes, the system, or an errors and messages list when writing test cases for release 1. As a result, they didn't always know if a test case passed or failed or where to go for answers about how certain functions or use cases were supposed to work.
5. Testers didn't know how to write test cases for release 1. Very few testers had any testing background. Although the Vendor supplied support and training, the State may want to provide additional training on testing when testing release 2.
6. The Vendor conducts a tiered approach to regression rather than conducting a full set of regression tests every time there is a change. While it is "ideal" to create an extensive test suite and run regression testing after each and every change, this often becomes impossible because test suites are too large, the changes come too fast, it is far too costly, or there is

not enough time, so a tiered approach is developed. Depending on the change, it may be that only the test cases that the change will impact are run again. Unfortunately, the right set of test cases is not always selected.

7. UAT Testers were not involved in the requirements sessions so they often didn't know the rationale or interpretation of a particular requirement. As a result, some defects were due to an interpretation that had not been considered during the requirements analysis. However, this also points to the requirements sessions not collecting enough detailed requirements on such things as reviewing edits, messages, field edits, and updated use cases.
8. The State has no visibility into the Vendor's defect tracking; it only receives pass/fail information and a basic high level test case description. There is also no trending defect information. All test results are in ALM, a tool to which the State has very little access.
9. The Vendor refused to use the TEST environment the State provided to them for their functional testing for release 1. Instead, they moved code from their Florida Dev environment directly into the Production Certification environment, which was contrary to the State's wishes.

5. SECURITY

For this audit, security was given a cursory review. This area needs a much more robust review and a follow-up security audit would be advised.

STRENGTHS

1. The Vendor's Security Auditor/Architect is very passionate and committed to ensure that all aspects of NIST security controls are covered, not only by the Vendor but also the State.
2. The Vendor has a strong detailed Security Plan in place that is updated frequently. The Security Plan provides an overview of the security requirements of the system and describes the control that must be in place for meeting those requirements.

CHALLENGES

1. There are three groups trying to figure out their security roles and responsibilities: the Vendor, the State MNLARS Team and MN.IT Central. There are also different interpretations on how to implement NIST guidelines between all three parties. Most of the NIST controls have nothing to do with application development; they focus on the security governance and controlling the security risks and the actions of people and systems, which must be in the State's jurisdiction. The Vendor's Auditor believes it is up to the State to create their own security policies, while the State believes that is the Vendor's responsibility to provide templates and guidance to the State. According to the Vendor, if the security controls are not explicit in the SOW, then the State is on the line for security.
2. Given the results of the security audit by the Vendor, both the State and Vendor Security efforts both need to go a lot further in order to meet NIST guidelines.
3. Security around interfaces and data access by non-human actors has not been fully addressed. Currently, there is no interconnection agreement for all their human parties accessing the MNLARS information in order to limit security vulnerabilities or an IAM component for non-human actors so the State can accurately identify where the request for data originates and if the originating system has authorization to the data.

4. There are concerns about the about the lack of focus and dedication regarding security of both the Vendor and the State. Security appears to be an afterthought for both the State and the Vendor since the security project team members are often left out of management meetings and efforts in creating and restructuring the SOW. In addition, there is no full time State Security Manager. The State only has a part time person assigned to MNLARS due to restructuring and MN.ITs involvement in the project. The State's Security Manager is also not an expert in NIST guidelines. On the other side, the Vendor has a Security Auditor who audits the Vendor's effort to meet the NIST guidelines and supports the State in their security efforts because there is no Security Architect or Security Tester assigned to the project or put into the Vendor's project budget.

6. ARCHITECTURE / INFRASTRUCTURE

Although the architecture and infrastructure analysis was out of scope for this audit, the interviewees identified the following strengths that could be leveraged for project success and challenges that still need to be addressed.

STRENGTHS

1. The State's Architectural Team is very experienced, competent and committed to the success of this project and supporting the business. They have been working hard to ensure that the Vendor's architecture will support the business processes and that it adheres to best practice. Unfortunately, the Vendor has made this oversight (as defined by the RFP) very difficult to do since the State's Technical Team does not have access or insight into the Vendor's technical architecture.
2. The Vendor's Architectural Team members are very professional, knowledgeable and also committed to the success of the project. The State's Technical Team has very high regard for the Vendor's team and the State and Vendor architectural teams work well together on the project. Chris Barbay and Hugo Reyes have been singled out as being "on top of their game; very talented individuals who are easy to work with". Unfortunately, it does not appear that they have the authority to influence the project. *(Note: Chris Barbay has left the project reportedly because of his discomfort with the Vendor's direction on the project.)*
3. Combined architectural meetings with the Vendor and State project team member to discuss the top 10 outstanding architectural issues from the State's perspective have begun. It appears that everyone has good intentions and they are working to resolve the outstanding architectural issues and questions.
4. Having an assigned liaison to coordinate the activities between the State Technology Team, the Vendor, and MN.IT Central has worked well. While MN.IT was defining its services and offerings, the liaison was helpful in the coordination of all project activities and communication that involved MN.IT personnel. The liaison also improved MNLARS team's working relationships with MN.IT Central, as well as supporting better response times and ensuring the right person was involved in the needed project effort.
5. The technical infrastructure build and installation went very well and was on schedule for Release 1. There were no bugs and just a few minimal issues. It has been reported by the Vendor that the Infrastructure Team has been very professional, cooperative, and responsive throughout the project to date, as well as being very accommodating through all the changing processes. The Vendor has been very impressed with the Infrastructure Team and states they have built up strong relationships with each other.

CHALLENGES

1. The State and Vendor Architectural Team members have incompatible architectural goals for the project. The Vendor wants to focus on the business needs of today and this was what they bid on for the project. They reportedly feel that the State's Technical Team members are getting paid to find issues with the architecture. The State's Technical Team wants to ensure the system is flexible, maintainable, and scalable for future needs of the business and a fast response time that meets business expectations. This creates frustration on both sides.
2. As of the date of this audit, the State still has not been given access or the needed information on the underlying architecture of the system so they can provide oversight. It appears the system is transactional based rather than use case-based. In addition, all the requirements, design and build efforts seem siloed and the Vendor appears to be just tweaking their core product. As a result the State has some key concerns about how the system will work as an integrated system and will it be easy to maintain.
3. There was a post-contract move to using MN.IT Central for central hosting and infrastructure. This move delayed the project schedule by about three months and complicated the project because MN.IT Central was just defining their service offering, so roles and responsibilities were not clearly defined around who owns what, who will support it, customize it, apply patches/upgrades, etc.
4. The State's IAM support is immature and needs to be improved prior to assuming full responsibility. Currently there is no dedicated team to provide support and no clear understanding of who is ultimately responsible for this support.
5. Scheduling and coordinating software upgrades, backups, and restores between the Vendor and MN.IT Central has been a challenge. The Vendor provides initial dates for the upgrade or backups/restores, so MN.IT Central works hard to get the right people on deck for the work effort. It has been reported that the Vendor often has to change the schedule for various reasons at the last minute, which leaves the MN.IT people just waiting around. At the same time the MN.IT was given a lot of kudos from the Vendor for being so flexible and accommodating.

7. RELATIONSHIPS

Project work is done by people and facilitated by strong relationships. Having the right people on the bus and developing strong relationships among those on the bus can make the difference between a successful project and unsuccessful project. The following is a list of strengths to leverage and challenges to overcome regarding team members on the project and their relationships.

STRENGTHS

1. The work between the Vendor and MN.IT is working well due to Nicole Tinberg. For example, the Vendor had to reschedule a number upgrades and backups with MN.IT and during that time, Nicole was not only doing a great job in rescheduling that effort (planning and activities are well thought out), but was also very accommodating and positive when changing the schedule.
2. The business users are very committed to the project and are extremely knowledgeable about the business processes. There is a lot of buy-in, excitement, and acceptance that this

project will be implemented and it will work. There is very low resistance to the changes and all the program areas want this project to be successful. There is not as much negativity or cynicism about the project as there was in the beginning of the project.

3. Business Supervisors have become great change leaders for the organization. These Supervisors have been working with their staff to help them think about processes and data differently. They also try to get their staff to see that this new project can provide each of them with new leadership skills and potentially different opportunities within the organization.
4. All the technical project team members are positive, enthusiastic, dedicated, and very talented. Everyone on the team has good intentions, are easy to work with, and want this project to be successful. They all realize how critical and important MNLARS project success is to the State.
5. The Vendor's relationship with business is very strong. They see the business staff as being great to work with; smart, informed, positive, and focused. They are reportedly some of the best informed users the Vendor has worked with to date. The business stakeholders reportedly want to be part of something successful.
6. Per the Vendor, Bill French and his team are fantastic to work with on this project. They are exceedingly responsive, easy to work with, and provide quick turn-around on infrastructure requests. Bill and his team have received praise from both State and Vendor project team members.
7. The Vendor and State test teams have built a very strong relationship during testing and work hard to support each other.

CHALLENGES

1. Even though the project team members have voiced a positive attitude about the project as a whole, negativity still tends to be an undercurrent in the project. A number of interviewees seem to think that many of the project team members are defensive and spend too much time justifying what they are doing rather than working together to make their project a success. There is also a tendency for team members to talk negatively about each other either in meetings or behind each other's backs which is counterproductive to the project. Open minds and positive attitude are needed to make the project a success. With that said there is a difference between being negative and providing constructive critique and feedback that is also needed for project success.
2. Some business people are reportedly intimidated in the presence of the technical staff. The business team members don't know what they don't know when it comes to understanding how software is built. They are experts about their business processes, but need to partner with the technical teams to help them create a quality software product.
3. Although the Vendor has created very strong partnerships with the business and let the business side provide oversight, they were not partnering with the technical team until early this year. The Vendor stated they never had to work with or integrate the client's technical team before this project. They are also not used to technical oversight by a client and as a result, the effort to provide technical oversight of the Vendor has gone very poorly.

8. ORGANIZATIONAL CULTURE

Culture is often very hard to change, but if it is ignored, it can be a hidden and significant barrier to moving forward with improvements. The key is to maximize the strengths of the organization and reduce or mitigate the barriers or challenges as much as possible. Although trust is improving between the technical and business team members, the seeds of mistrust are still in the air.

POTENTIAL BARRIERS

1. It has been reported that the State Business Team members demonstrate “Minnesota Nice” in that they really don’t tell you what they think, they don’t speak up, nor do they challenge the status quo. They are very risk and conflict avoidant.
2. The Business culture still works as a command and control culture, as well as being overly consensus oriented in which people are not empowered to make decisions.
3. Business and technical teams are still siloed. They don’t fully understand the other’s perspective and each have developed their own subcultures within the organization. While this is normal to many organizations, building trust between both parties is critical to the success of the MNLARS project.
4. There appears to be a deep mistrust of the business regarding the technical team. The business perceives that the technical team:
 - Doesn’t want or value the business’ input.
 - Doesn’t understand what the business needs.
 - Doesn’t listen to or respect the business.
 - Sees the project as a resume builder. Their top priority is themselves and not a long term solution.
 - Talks over the heads of the business and are arrogant
 - Is not in alignment with the business.
 - Is trying to drive the project instead of the business.
 - Doesn’t understand the responsibility the business has to the legislature and to get the project done right.
 - Doesn’t go to the business with questions on business process improvements.
 - Doesn’t understand the DVS customers or the laws behind everything. As one business interview shared, “it is important that business is driving the project because we were burnt in the past and learned the hard way.”

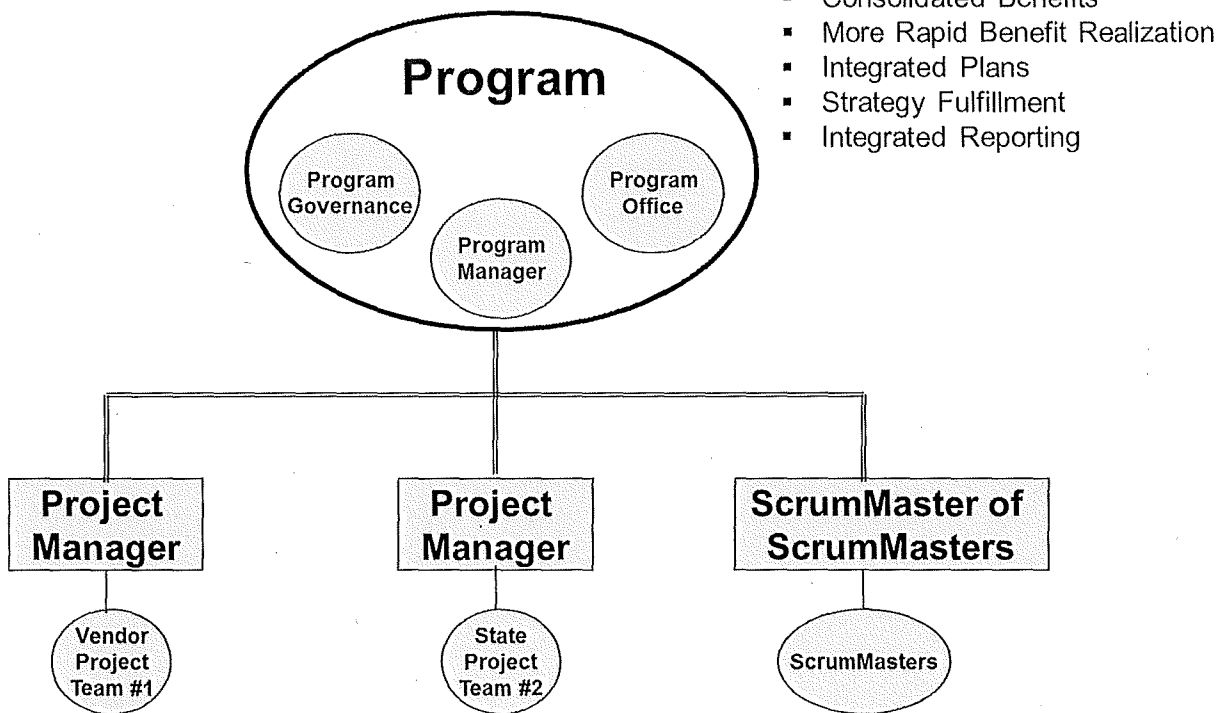
The Technical Team perceives that the business:

- Doesn’t want to hear their feedback even when their feedback would improve the quality of the product.
- Doesn’t believe they are working hard to support the business efforts.
- Are more ready to believe the Vendor over the State’s technology department that is there to support them.

5. The technical team members are frustrated that they can't influence the outcome or direction of the inner workings of the application, architecture or infrastructure. They believe the business doesn't want to listen to ideas that could make a stronger system. The technology consultants said they could all be working somewhere else but they want to be on this project so they can make a difference and provide value. They are paid to provide guidance, but then are told to shut up and not say anything. They feel they get treated like the enemy rather than a partner.
6. Past history between the business and technical groups may be getting in the way of a closer relationship between the two parties. Many things could be at play here. It could be that over the years the technical areas have been putting in more structure and processes in place so analysis could be done on the technical impacts of a business change request, while the business may still remember the days when they could go to the developer for changes to the system. It was also reported that in the past the technology team did not listen to the business and as a result past technology efforts were a failure. The business also reportedly harbors feelings that they are looked down upon and dismissed because they are paid less and provide more clerical support. They have also been the butt of DMV jokes which has impacted their pride and self-worth.

APPENDIX D: POTENTIAL PROGRAM STRUCTURE

Proposed MNLARS Program Structure



- Consolidated Benefits
- More Rapid Benefit Realization
- Integrated Plans
- Strategy Fulfillment
- Integrated Reporting

Program Governance: The purpose of a project governance structure is to provide a clear message on the impacts and benefits of the project, improve project oversight and predictability of project outcomes, clarify key project roles and responsibilities, set stakeholder expectations, ensure strategic alignment of projects, resource the project appropriately, and resolve escalated risks and issues. This group includes the Executive Sponsor, Steering Committee, MAC committee and Project Directors.

Program Manager: Program managers serve a strategic role within an organization’s project management group. They do not manage individual projects, but instead coordinate the project teams working on related projects. They oversee all project managers and initiatives and work closely with the project governance board members.

Program Office: Can leverage the existing State PMO.

Vendor Project Manager: Reports to the Program Manager and manages all the Vendor resources and project activities.

State Project Manager: Manages the technical team (architecture, business systems analysts, database conversion and migration) and coordinates the efforts of MN.IT activities, the infrastructure team and the legacy support team.

ScrumMaster of ScrumMasters: Oversees all the ScrumMasters and their Sprint efforts.

PROGRAM MANAGER RESPONSIBILITIES (EXAMPLE)

Here is a listing of some key responsibilities and skills sets of a Program Manager.

KEY RESPONSIBILITIES

- Coordinate the work of the project managers and ScrumMaster of ScrumMasters.
- Work closely with members of an organization's Senior Management Team to set the overall strategy and objectives for the projects (Vendor & State).
- Align the outcome of the projects with the organization's overall goals.
- Communicate the strategy to the project managers and ensure that individual project goals align with the strategy.
- Ensure project teams have the resources they need to do the project.
- Oversee the established budget and management of that budget.
- Provide vendor management.
- Establish priorities within the overall program and allocate resources in line with those priorities.
- To minimize waste and reduce costs, they identify tasks that are common to a number of project efforts and ensure that teams do not duplicate work.
- Work with the Project Managers to review the skills available within the project teams and arrange any necessary training to improve performance or get the needed skill sets on board the project.
- Set review dates to ensure that projects remain on target.
- Monitor progress across all projects and establish a formal reporting structure for project status.
- Report to senior executives on the progress of individual projects and the overall program.
- Have authority to make decisions and oversee the Vendor (shared with the Sponsor).
- Conduct ongoing analysis to identify trends, variances and issues.
- Work proactively with the program governances that provides for decision making at appropriate levels.
- Ensure all team members work together to achieve program goals.
- Effectively resolve issues and problems.
- Effectively handle personal and team adversity.

SKILLS REQUIRED

Following, is a listing of key skills needed by a Program Manager.

- Have a strong background in software project management.
- Ability to work with and influence senior level executives.
- Ability to facilitate the resolution of disagreements between parties.
- Ability to tailor communication to the audience and have strong communication skills.
- Strong leadership skills to coordinate and motivate project teams.

- Be adept at financial management to ensure the program meets its requirements for return on investment.
- Must be well versed in the various project approaches (Waterfall, Incremental/Iterative Waterfall and Scrum).
- Be able to constructively challenge common beliefs and assumptions.
- Experience in working in government.
- Ability to build trust between all project teams.

SCRUMMASTER OF SCRUMMASTERS

KEY RESPONSIBILITIES

- Coaching the ScrumMasters.
- Capable of supporting self-organization projects.
- Supporting and facilitating the operation of Product Owner team, both internally and in stakeholder interfaces.
- Supporting Product Owners, ScrumMasters and Engineering Managers in the development of the product organization and its internal ways of working.

APPENDIX E. SCRUM: ADVANTAGES & DISADVANTAGES

ADVANTAGES

- Customer satisfaction by rapid, continuous delivery of useful software.
- People and interactions are emphasized rather than process and tools. Customers, developers and testers constantly interact with each other.
- Working software is delivered frequently (weeks rather than months).
- Face-to-face conversation is the best form of communication.
- Creates a close, daily cooperation between business people and developers.
- Continuous attention to technical excellence and good design.
- Regular adaptation to changing circumstances.
- Even late changes in requirements are welcomed.

DISADVANTAGES

- In case of some software deliverables, especially the large ones, it is difficult to assess the effort required at the beginning of the software development life cycle.
- There is lack of emphasis on necessary design and documentation.
- The project can easily get taken off track if the customer representative (i.e. Product Owner) is not clear what final outcome they want.
- Only experienced, senior programmers are capable of making the kind of decisions required during the development process.
- Project quality management is hard to implement and quantify unless the test team are able to conduct regression testing after each Sprint.
- Scrum says there should be one Product Owner. In practice it ends up putting a whole product's life into the hands of one person. Which person? If that person is someone high up in the organization, they won't be the Product Owner for the team, but rather the boss. The team will just do whatever the Product Owner says and stop being autonomous and self-managing. If someone lower in the organization is selected, they may not be able to make decisions. It would be best to find someone who can be the "voice of the business." Their role is to network, obtain feedback, etc. etc.

APPENDIX F: PROJECT MANAGEMENT AUDIT ASSESSMENT

Available upon a request to the Senior Technical Project Manager (Patty Hunter)

APPENDIX G: SDLC AUDIT ASSESSMENT

Available upon a request to the Senior Technical Project Manager (Patty Hunter)