State of Missouri
2020 Governor's Award for Quality and Productivity
Executive Summary

Project or Team Name: Maintenance Management System (MMS) Phase 1

Nominator: Natalie Roark

Nominating Department: (Nominations must include names of all agencies/departments/organizations/ businesses, etc.)

MoDOT

Category: Efficiency / Process Improvement

Executive Summary: (Executive Summary page must be 500 words or less, 12 point, Times New Roman font, and left justified. **Attach the Executive Summary to the front of the nomination.**)

When someone thinks of MoDOT, they often reflect on the transportation system afforded them and the work needed to address maintaining highways and bridges. Backing this maintenance effort is an agency primarily comprised of a staff that pushes snow, mows along roadways, replaces signs, maintains surfaces and much more. In fact, 54% of MoDOT's salaried staff and about 20% of its budget are devoted to providing Missouri travelers with the best possible experience which is accomplished by our maintenance team. Advancements in technology and an increasing number of different software programs never really addressed some of the basic needs of some 3,000 maintenance staff members. For years, this group of individuals wanted to have software capabilities that unified and simplified documenting and data retrieval processes. In 2015, MoDOT began to seriously consider what it would take to craft a custom product that met the needs of the maintenance staff. A framework was created to build a system that would rival off-the-shelf products that have both high initial and on-going costs.

Maintenance Management System (MMS) was born through the commitment of MoDOT to enable data to be easily captured and extracted in much greater detail to show Missourians the value of what they are getting in their transportation investment. The new software would also give the staff the ability to make the best possible decisions from solid and timely information. To accomplish this, MoDOT made a commitment in both funding and exceptional staffing/resources. Soon a team of individuals were escorting a wide variety of elements through a process of design, development and implementation of MMS. This product is available to all MoDOT employees and is utilized daily by public servants making our highways safer and more pleasant to drive. The Phase 1 portion of MMS allows all maintenance employees to document their work. Utilizing a variety of modules, MMS can perform the following:

- Allow supervisors to plan, assign and approve work,
- Track consumable inventory,

- Provide map-based visuals of conditions and other important decision-making data,
- Allow users to investigate information on fleet, and
- Look at what MoDOT has accomplished with an array of interactive graphics.

All of these modules and more work together in an integrated way to provide one location from which maintenance staff can now operate. The average traveler will not be aware of the impact MMS has on the system, but hopefully they can appreciate the fact that MoDOT is wisely investing in continuing to make it better. The improvement and the efficiency gained through newly implemented processes will translate into tangible differences as can only be accomplished through the hands-on efforts of MoDOT maintenance staff. This staff is very appreciative of MMS capabilities and the benefits of the system will be reaped for years to come.

Video Summary: A brief - no longer than three minutes - video summary may also be submitted via a link. Submission of a video summary is optional.

Maintenance Management System – Video Link

https://app.box.com/s/ml3ssroq8nosdvbzmuflpxyx9nfb08tq

State of Missouri

2020 Governor's Award for Quality and Productivity
GUIDELINES

PURPOSE
The Governor's Award for Quality and Productivity (GAQP) recognizes teams that champion service excellence, efficiency, innovation, technology, process improvement, and employee development in Missouri state government. All projects must meet requirements of effectiveness, responsiveness, and efficiency of such magnitude that would make the project a model of excellence in state government nationally.

ELIGIBILITY
Any team of individuals employed by the State of Missouri who worked together to implement a project within their own agency, or who have worked with another section, division, department, agency, organization or business to implement a project which exemplifies the purpose of the GAQP, may submit a nomination. The combined number of individuals representing any team should consist of **2 to 20 team members** (underline maximum) – the majority of whom are state employees.

Teams must provide documentation which includes, but is not limited to, background information, measures, and other supporting material that demonstrates the impact of the project. Projects are encouraged to demonstrate the potential for replication in other jurisdictions or settings.

Once a nomination has been approved by the department/agency and submitted for consideration for the GAQP, additional team members may not be added.

All projects must have been in existence long enough to have a **measurable** impact.

EXECUTIVE SUMMARY
Describe (in 500 words or less) the initial challenge, research, problem-solving measure, documentation, results, etc. Executive summary page must be typed in 12 point, Times New Roman font, and left justified. **Attach the executive summary to the front of the nomination**. [A blank Executive Summary document is available at the end of this document.]

NOMINATION PROCESS
A team of managers, directors, and/or state executives reviews nominations and selects the winners of this award which recognizes successful teams in Missouri state government.

1. Secure nomination packet from your agency/department GAQP coordinator or on the GAQP web page at http://www.training.oa.mo.gov/erp/index.htm.

2. Complete the nomination form (providing ALL information requested)
3. Forward completed nomination form to the [agency/department GAQP agency coordinator](#).
4. Agency/department GAQP coordinator reviews nomination form and ensures that all information and documentation is complete and accurate.
5. Agency/department coordinator secures agency/department director endorsement signature and forwards completed nomination packet to GAQP state program coordinator.
6. **<u>Do not submit hard copies of information, documentation, videos, etc.</u>**

CATEGORIES

Customer Service
The winning team(s) will identify and develop measures to improve customer service in Missouri state government. The winning project(s) will establish how its development and implementation provided the agency a means to more effectively satisfy customer, stakeholder, and public expectations. This will include, but is not limited to, communication, information, responsiveness, resolution of problem(s), and on-time, reliable, consistent customer service delivery.

Efficiency / Process Improvement
The winning team(s) will develop an effective and creative approach in using state resources to implement a new process or deliver a product or service. Implementation of the winning project must have improved the overall quality of products and services, significantly enhanced operational efficiency, simplified work processes, generated increased revenues, or reduced spending.

Innovation
The winning team(s) will develop and implement a new process/product/service or a better application to an existing process/product/service to create an "added value" to state government. The winning project will deliver benefits to the citizens of Missouri through advances in vital services such as healthcare, education, communications, transportation, etc.

Pinnacle Award
The winning team will be chosen from a nominated team if, in the opinion of the Selection Committee, the nomination clearly encompasses multiple award categories in a manner that exemplifies the spirit of the Governor's Award, or exceeds all other nominations. This award is not open for nomination and may only be used by the GAQP Selection Committee.

Examples of previous winning nominations for the above categories are available by visiting the following link: previous winning nominations.

Agency/Department Coordinator Forwards Complete Packet to:

Governor's Award for Quality and Productivity
Office of Administration – Division of Personnel
Attn: John Beakley
Center for Management and Professional Development
Truman State Office Building, Room 430
301 East High Street
Jefferson City, MO 65101

John.Beakley@oa.mo.gov
573-526-4554

http://www.training.oa.mo.gov/recognition.htm

State of Missouri – 2020 Governor's Award for Quality and Productivity

NOMINATION FORM

I. GENERAL INFORMATION

Department: Missouri Department of Transportation

1. **Project or team name:** Maintenance Management System Phase 1

2. **List the name of all team members, job titles, state agency department, and/or other organizations including public, private sector or business:** *(Please list alphabetically by last name – 2 to 20 team members maximum.)*
    1. Becky Allmeroth, Chief Safety and Operations Officer, MoDOT
        Amy Binkley, Planning and Programming Coordinator, MoDOT
        Steve Bushko, Senior Communications Specialist, MoDOT
        Suzanne Carlisle, Project Manager, RKV Technologies, contractually with MoDOT
        Tim Chojnacki, MMS Team Lead, retired MoDOT
        Tommy Caudle, MMS Administrator, MoDOT
        Suzette Kempker, Project Director, MoDOT
        Geoff Luebbering, Financial Services Coordinator, MoDOT
        Cheri Middendorf, Senior System Management Specialist, MoDOT
        Michael Middleton, Maintenance Liaison Engineer, MoDOT
        Janelle Rackers, Senior Admin Professional – TPT, retired MoDOT
        Brian Reagan, Transportation System Analysis Engineer, MoDOT
        Michael Rinehart, MMS Team Lead, retired MoDOT
        Beth Ring, Information Systems Director, MoDOT
        Natalie Roark, State Maintenance Director, MoDOT
        Aron Saylor, Senior Information Systems Technologist, MoDOT
        Marisa Senevey, Information Systems Supervisor, MoDOT
        Aaron Utrecht, Senior General Services Specialist, MoDOT
        Jay Whaley, Transportation Management System Administrator, MoDOT
        Amy Wilson, Assistant Information Systems Director, MoDOT

3. **Nomination Category**: *(Check only one.)*
    ☐ INNOVATION   ☐ CUSTOMER SERVICE

    ☒ EFFICIENCY / PROCESS IMPROVEMENT

4. **Explain why you selected this category:**
    Imagine trying to do your job while culling information from at least eight different software programs to consolidate into a single, comprehensive report. MoDOT maintenance staff didn't have to imagine this scenario—it was all part of a time-consuming process to document and acquire data. The Maintenance Management System (MMS) consolidates multiple programs into one easy-to-use, tailor-made platform, making retrieving data far more efficient and improving decision-making capabilities. In the past, some of the data needed for documenting maintenance work had to be manually entered

from hand-written notes. MMS reduces duplication of efforts by cross-posting information to appropriate reports and records where data may be automatically retrieved. Because MMS integrates with approximately 100 data tables, employees are provided greater access to information with an additional 380 new touchscreen-capable laptops placed in 191 maintenance field locations. Ultimately, this benefits nearly 3,000 maintenance workers, as well as the state and traveling public because better data translates into better decisions, more efficiency, dollars saved and more work accomplished in a shorter time.

II. BACKGROUND

1. **When did the team begin its work?**
   The initial team was formed in July 2015 followed by the creation of an MMS Dedicated Team in August of 2016. Following a lot of thought and discussion that went into the crafting of the MMS, the design effort began in May 2017. This was followed by development beginning in April of 2018.

2. **What date did the team initiate the implementation phase of the project?**
   Incremental implementation of MMS occurred from November 17, 2019 to March 15, 2020 with 191 organizational units adopting use of MMS for data entry as well as information availability to all MoDOT staff effective November 17, 2019.

3. **Is the project:**
   ☐ Time Limited   ☒ Completed   ☐ Ongoing

III. PROJECT DESCRIPTION

1. **Why was the project necessary?**
   MMS was needed to improve processes and capture greater efficiency among approximately 3,000 maintenance staff members at MoDOT. The web-based software is on a single platform from which maintenance staff can assign and document work, record or approve fleet usage calculations, look up information on a wide variety of assets and access data from multiple data tables at MoDOT. It also brings about a greater measure of consistency on processes and documentation by allowing for greater detail in data gathering. Extracting and utilizing the data comes with little effort with the tools available within MMS. A lot of effort went into creating a system that would be easy to use. MMS contributes to reduced duplication of effort. It takes a huge step forward in process uniformity which in turn contributes to more accurate data.

   Other state DOTs have used off-the-shelf software that is expensive and typically requires periodic product updates. Using a specific, custom-designed software does not require an annual fee and adjustments to the system can be done when needed and to the degree desired. MMS is a system perfectly matched to Missouri's needs and embodies the input of numerous individuals at MoDOT who contributed thought and effort into crafting an outstanding product that will be used for years to come.

   MMS has allowed MoDOT maintenance to move out of a restrictive and somewhat painful past. No longer will employees need to access multiple programs. Supervisors will not

need to spend as much time documenting work efforts. Trying to get data will not require running a special report. MoDOT has moved into a technologically advanced future. This future includes mobile capability, tremendous use of data integration, application of Automatic Vehicle Location (AVL)/Global Positioning System (GPS) meter readings (miles and/or hours), utilization of a sophisticated Geographic Information System (GIS)/Linear Referencing System (LRS) platform and includes individualized computer access for all maintenance staff. For example, supervisors who plan work can now look at data for road and bridge conditions along with traffic counts to help prioritize projects. Also, data accuracy and detail increase because exact begin and end log points can be selected from a map when documenting specifically where the work was performed. Formerly, work coordinates could only be provided as estimates.

2. **What were the primary goals of the project?** *(150 words or less.)*
MMS was designed as a web-based program for capturing and reporting data related to all maintenance activities, including winter operations, materials, equipment and labor associated to specific routes. Additional goals of the software include:
   - Providing an ability to show the value of the operating budget,
   - Improving means of planning work by providing visual representation of specific employees doing specific tasks,
   - Consolidating the reporting of all maintenance related activities,
   - Integration of multiple data sources such as fleet, inventory, financial, time reporting, etc. to improve accuracy and timeliness of data, and
   - Creating a web-responsive enterprise system that can be used on mobile or desktop devices in a graphic rich environment that provides dashboard reports with maps, graphs and charts to give users a visual of desired data and trends.

3. **Describe the project:** *(200 words or less.)*
The project was a result of many months of research across the state to understand how each of MoDOT's seven districts managed maintenance activities, what obstacles they faced, what software they used, and how to make tracking and reporting their tasks more efficient. The goal was to create a single program for maintenance personnel to assign work and equipment, as well as to document their work, the materials used and the location of the work. In addition, the system would provide results and performance data so leadership could make informed decisions on the best use of available resources.

MMS was created to maximize MoDOT's ability to step out of the past, with its abundant limitations and obstacles, and into a future of interconnected systems in an easy-to-use, sophisticated computer environment. The seismic shift will be felt for years to come and promises to make MoDOT more efficient as it continues to maintain approximately 34,000 miles of state roads and 10,400 state bridges. The access to rich amounts of reliable and timely data will take decision-making to the next level.

4. **What technology, if any, was used in the development, implementation, maintenance or measurement of the project?** *(150 words or less.)*
MMS software utilizes .NET coding to access multiple Oracle-based tables of data. More importantly, where in the past only a limited number of crew workers had computer access,

MMS is available to all MoDOT employees. Security level assignments and user identification credentials display a personal experience to each individual based on defined capabilities. Nearly 3,000 maintenance staff members now have unprecedented web access via existing smart phones and 380 new touchscreen-capable laptops placed in the field. Batch processes, data verification methods and error detection are used extensively to ensure data accuracy and availability.

5. **Explain how the accomplishment of the team exceeds its regular duties and responsibilities.** *(150 words or less.)*
The MMS Dedicated Team consisted of those employees who were singularly concerned with MMS design, development and implementation/deployment. Other MoDOT Project Team participants maintained their wider spectrum of responsibilities. Information Technology contractual resources were also a significant part of creating MMS. All members were able to collaborate and work well together with high levels of communication and coordination. It was not uncommon for team members to work late and on weekends beyond the scheduled workday to ensure MMS progressed with little disruption. Orchestrating batch processes, data migrations and deployments were strategically accomplished to minimize the impact to times when users were expected to be active in MMS. Each of MoDOT's seven districts were represented by staff members who needed to maintain their current duties while also assisting with MMS efforts/progress. Dedicated staff received multiple MoDOT Noteworthy awards and frequent commendations for their contributions.

6. **Which of the following describes the intended benefits of the project?** (Check all that apply and provide an explanation. - 150 words or less)

☒ Cost Reduction   ☒ Time Savings   ☒ Increased Effectiveness
☒ Improved Process   ☐ Other: Describe

Explain the intended benefits:
MMS primarily represents a significant improvement in process for MoDOT. With all maintenance employees responsible for their share of data entry, the burden on supervisors is reduced. That is not to say that the project does not impact cost, time, and effectiveness. For example, the reduced duplication of effort in tracking equipment usage and taking advantage of AVL meter readings favorably impacts costs, reduces the time to capture data and makes the overall process more effective while limiting the possibility for errors in manual entry. Other benefits include ease of use, improved accessibility, the ability to show value, timely inventory tracking, improved communication and the ability to plan work. This web-based, sophisticated and highly integrated tool has a wide range of benefits.

IV. RESULTS / MEASUREMENT

1. **Explain how the success of the project was measured and what outcomes were achieved.** (Explanation should not exceed 300-500 words.)
Much of the success can be measured in the receptiveness and appreciation displayed by MMS users. As the project advanced, the development team continuously asked if it was being adopted well and consistently received favorable responses. This is a tremendous

outcome as a change of this size can easily be the source for wide-spread discontent. The team was also concerned if communications were sufficient in volume, timeliness and helpfulness. Responses again were favorable. Training was accomplished across the entire state and reactions to the information presented were positive. It was nice to hear the appreciation and approval reflected in this project.

MMS, amazingly, had only one change order that resulted from an unforeseen update in MoDOT policy to account for a winter operations market adjustment. MMS is considered easy to use which meets one of the most important elements sought in creating a product from scratch. A dashboard notified people of progress, while videos and other communication tools were utilized to maintain high levels of awareness on progress.

MMS also had a couple goals met that included:
1) initial deployment to pilot buildings on November 17, 2019 and
2) full implementation by the Federal Fiscal accounting of reimbursable project work of March 16, 2020.

The key to success is two-fold: user approval and favorable measurables. It avoided scope creep and cost growth with only one change order and sidestepped delayed implementation by meeting two milestone dates.

The before and after MMS pictures are vastly different. As noted in other parts of this document, there are numerous benefits brought about by the creation of this system. No one is looking to keep a foothold in the past. The maintenance staff is thrilled there has been an investment to move MoDOT into a better future.

2. **Are the benefits derived from this project:** (Check only one.)

   ☒ Recurring   ☐ One-time

3. **If recurring, how will the benefits be sustained?** (Explain in 150 words or less.)
   MMS is here to stay. New employees are taught how to use the system and seasoned users are expanding their knowledge of the many benefits of better processes, time savings and cost-impacts of improved decision-making. Phase 1 represented a large step forward for MoDOT and Phase 2 has been underway since November 2019 with future phases to follow. Each phase adds to the breadth of capability and functionality, making its value grow with time. At one time, the three-person MMS Dedicated Team was not assured of permanent roles, but now it has been determined that an on-going staff of four will be necessary to address sustaining needs. Those members will continue to utilize contractual resources and incorporate a wide array of MoDOT staff to ensure the continued effectiveness of MMS.

V. RECOGNITION / AWARDS

1. **Has this project previously been nominated for the Governor's Award for Quality and Productivity? If yes, when?**

    No, this is the first time MMS has been nominated by MoDOT.

2. **If yes, for which category was it nominated?**

    N/A

3. **Has this project received any other awards or recognition? If yes, describe.**

    MoDOT presented MMS Successes to the Mid America Association of State Transportation Officials – a region of the national transportation organization, American Association of State Transportation Officials – during the August 10-14, 2019 multi-state conference. MoDOT's MMS is currently being recognized as a model to other state DOTs. Ohio, Tennessee and Kansas have all expressed some interest in what was accomplished by Missouri.

VI. NOMINATOR'S INFORMATION

Nominating Department: MoDOT

Name: Natalie Roark

Signature: Natalie Roark Digitally signed by Natalie Roark Date: 2020.04.13 13:27:22 -05'00'

Telephone Number: (573) 526-4316

E-Mail Address: Natalie.Roark@modot.mo.gov

VII. DEPARTMENT COORDINATOR'S INFORMATION

Name: Kelly Backues

Signature:

Kelly Backues Digitally signed by Kelly Backues Date: 2020.06.24 16:11:34 -05'00'

Telephone Number: (573) 751-5985

E-Mail Address: Kelly.Backues@modot.mo.gov

VIII. DEPARTMENT DIRECTOR APPROVAL

Department Director's Name: Patrick McKenna

Signature: *Patrick K McKenna*

Nomination must be signed ONLY by the Department Director to be eligible for consideration. Nominations not signed by the Department Director will be returned to the agency coordinator.