



Driving Asset Management Through Performance

Culture Change and Proven Results at the Missouri Department of Transportation

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Ask a Missouri Department of Transportation (DOT) employee about asset management, and the first response may be a blank stare. Ask about performance management, and the answer invariably will include Missouri DOT's battle cry of "Better, faster, and cheaper!"

Missouri DOT doesn't use the term asset management as often as most state DOTs do, but under the umbrella of the performance management system, the agency continually addresses the expectation to improve in all areas defined by the principles of asset management. Missouri DOT's common-sense, results-driven approach aligns closely with the asset management standards of maximizing short- and long-term performance, minimizing cost, and improving customer satisfaction.

Asset management is integral to Missouri DOT's performance management system. The key is accountability—another term that Missouri DOT employees have come to understand and embrace in recent years. Accountability has become the norm for managers and front-line workers.

Results Tracker

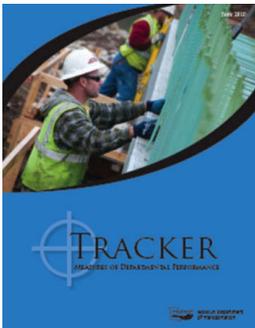
Missouri DOT has achieved significant improvements in pavement and other assets by implementing a performance management approach throughout the organization. A profound culture change has occurred, with performance management incorporating asset management practices as part of the department's data-driven and results-focused approach.

Tracker, a quarterly publication of departmental performance measures, is a primary indicator of Missouri DOT's progress.¹ The public document is prominently displayed on the agency's website but has extensive internal use to ensure accountability. Tracker spells out the department's mission, values,

Photo: Missouri DOT



The performance management system of the Missouri Department of Transportation (DOT) emphasizes accountability and results.



Tracker provides a snapshot of Missouri DOT's performance progress—both for department staff and for the public.

¹ www.modot.mo.gov/about/general_info/Tracker.htm.

and priorities and is built on 18 tangible results that Missourians expect. More than 100 performance measures directly linked to tangible results are tracked to gauge performance in such areas as traffic flow, pavement and bridge conditions, safety, roadway visibility, customer service and response, innovations, project delivery, environmental impact, access to modal choices, wise use of funding, and economic development.

The performance results documented in Tracker are the focus of mandatory quarterly review meetings. All managers and departments explain their performance to executive leaders and their peers, compare and benchmark their performance with that of other DOTs and organizations, and present the actions taken to continue improvements.

Each division and district also has its own Tracker with metrics specifically related to its functional area; these in turn affect the results and measurements in the department Tracker. The work-level Trackers have played an important role in the culture change that has accepted the performance management model at all levels.

Through Tracker, Missouri DOT has established a set of clearly defined, expected results and performance for the condition of the highway system. Tracker closely links asset management and performance management. Missouri DOT's asset management system is effective because it is part of an organizationwide performance management system. Behind it is the mantra of "better, faster, and cheaper" that guides efforts to improve performance.

Change of Focus

The focus on performance and results is recent. Historically, Missouri DOT has had to do more with less, operating with one of the lowest state gas taxes in the nation; moreover, the federal revenue received per mile of the state highway system annually falls among the lowest 15 percent among the states. The low ranking in revenue per mile is partly the result of the large number of farm-to-market roads incorporated into the state system during the 1950s.

Missouri's state highway system is the seventh largest in the United States, with approximately 33,000 miles. Missouri DOT's 10,249 bridges and culverts also rank seventh in the nation; with 53 major river bridges, Missouri has more major river crossings than any other state.

During the mid-1980s, the department focused on customer satisfaction and new construction. The system underwent significant expansion, but the budgets for asset management and pavement maintenance did not grow comparably. The new construction was not always linked to costs or

PHOTO: MISSOURI DOT



The Jefferson City Bridge over the Missouri River is one of the state's 53 major river crossings.

performance. Attempts to establish a performance management system mostly relied on after-the-fact reporting and were not widely used in planning or decision making.

The performance management system did not work for maintenance and condition of pavement and other asset conditions. Eventually, Missouri DOT scrapped its 15-year plan because of the difficulty in projecting costs and funding. The replacement 5-year plan focused on high-priority projects. The abandonment of the 15-year plan and its unfulfilled promises, however, eroded Missourians' trust in the department and brought intense scrutiny by elected officials and the media.

Missouri DOT needed a clear, overarching vision and strategies to balance expansion with asset management—a new way of doing business. Executive leadership would have to champion the change, shaping this new way of doing business and the form it should take.

Road Rallies

The changes started slowly in early 2000, with a series of road rallies to determine what was impor-

PHOTO: MISSOURI DOT



Customers surveyed in Missouri DOT's road rallies placed highest importance on traffic flow, signs and markings, and roadway condition.

Contrary to expectations, roadside mowing and litter pickup were not ranked as major priorities by road rally participants.



Photo: Missouri DOT

tant to customers and what their expectations were for road and bridge conditions. Participants included randomly selected citizens; local civic officials; representatives from regional and metropolitan planning organizations, chambers of commerce, and economic development agencies; and Missouri DOT employees.

Rally riders were driven around the state on different roads and bridges and were asked to grade road conditions according to pavement smoothness, lane and shoulder width, striping, signage, and other criteria. Missouri DOT staff previously had rated the roads according to engineering standards. The department could assess the system using the customer scores and could compare what customers found acceptable with the results from the engineering standards. These scores provided a baseline for Missouri DOT to measure success.

The results from the road rallies were used to develop performance measures. What Missouri DOT assumed was important to its customers differed from what the road rally feedback indicated were customer priorities—the physical condition of the roadway, the marking of intersections, traffic flow

and congestion, the ease of getting on and off roadways, and bridge width and smoothness. In contrast, Missouri DOT staff had expected that the mowing and trimming of roadsides and the clearing of litter and debris would outrank these.

Distributing Funds

The novel idea of listening to customers led to other significant changes in how Missouri DOT operated and how it allocated resources. For example, the distribution of funds had been the subject of debate for more than a decade. Methods for allocating limited transportation dollars had changed with long-term project plans and with the politics of dividing funds between the urban and rural areas of the state.

In January 2003, the Missouri Highways and Transportation Commission adopted an objective method of distributing transportation funds to reflect the size and use of the system, as well as where people live and work. The new method went beyond the discussions of geography and allowed for allocations based on objective, transportation-related needs.

The fund distribution method also sought a balance between maintaining the already-built system and adding new capacity. The direction set by the capacity expansions of the 1980s had taken a toll on the statewide system—the condition of roads and bridges reflected the past emphasis on expansion. Taking better care of the system—also known as asset management—was overdue.

The 2003 funding distribution formula set aside a fixed amount of funds to take care of the system. Previous methods had similar set-asides, but the amounts were not enough to stop the decline in road conditions. The change allowed the department to stabilize the condition of the system and to begin making improvements.

Missouri DOT's fund distribution plan allocated resources based on an area's size and on its use of the transportation system—whether a rural or urban area.



Photo: Missouri DOT

Timely Champion

Earlier attempts to implement performance management principles at Missouri DOT did not succeed because commitment and support at the executive level were lacking. In September 2004, Missouri DOT found its champion—Pete Rahn was appointed director. Cabinet Secretary for the New Mexico State Highway and Transportation Department from 1995 to 2002, Rahn brought a charismatic ability to manage a large organization, to articulate a vision for success, to motivate people, and to stay focused. Rahn was an advocate of performance management—Missouri DOT had found the right leader at the right time.

An adage asserts, “What gets measured gets done.” Rahn’s purposely simple yet effective take on performance management guided Missouri DOT’s

successful progress during his 5 years as director.

Early on, Rahn asserted that a good performance management process would allow Missouri DOT to maximize its resources and earn trust and accountability from the public, legislators, and the media. “It will allow us to show a logical, systematic approach to managing taxpayers’ money, and most importantly, it will show them the tangible results provided by their investment in us,” he noted.

When managers responded that the data to support performance measures—whether from customer feedback or asset management—were not reliable, Rahn reassured them that the data would improve with use. “We have to start somewhere; the fastest way to improve your data and measures is to start using them,” he observed. He exhorted the managers to avoid frustration over imperfect measures, because the measures would evolve, with the ineffective and inappropriate ones discarded in favor of better ones.

Implementation Tactics

Rahn demanded results and accountability from employees and contractors. A cheerleader for innovation, he encouraged and endorsed new approaches such as practical design and design-build contracts, but tempered with a responsibility for outcomes. His intuitive methods for challenging his team to perform beyond expectations created an environment of success and a nationally recognized performance management model.

In implementing Missouri DOT’s performance management system, Rahn applied four tactics:

◆ *Empowering*—Instead of top-down, imposed measures, he allowed middle managers who produce the results to develop their own measures.

◆ *Driving innovation*—Rahn and his team jointly developed a new set of value statements. One of them advises, “Encourage risk and accept failure, because we believe in getting better.”

◆ *Demanding results*—Tangible results are Missouri DOT’s bottom line—or in business terms, its profit. There is no alternative—results must be achieved.

◆ *Holding staff accountable*—Staff who consistently failed to produce results and who performed poorly were seen as tarnishing the trust that others were building with customers.

Sample Results

Missouri DOT is delivering results-driven programs and projects on time and on budget—often ahead of deadline and below budget. A few examples are highlighted below.

PHOTO: MISSOURI DOT



Smooth Roads Initiative

In 2006, Missouri DOT completed the Smooth Roads Initiative (SRI) 1 year ahead of the schedule set by Governor Matt Blunt. The SRI delivered smoother pavement, brighter striping, rumble strips, and other safety improvements to 2,200 miles of the state’s busiest highways. A survey of Missouri motorists after the completion of the SRI indicated that 79 percent believed the improvements were a good investment of taxpayer dollars, and 80 percent thought that Missouri DOT should continue with similar improvements.

Former Missouri Transportation Director Pete Rahn celebrates the completion of the Smooth Roads Initiative in 2007.

Better Roads, Brighter Future

To continue the progress under the SRI to keep the roadway system in good condition, the Better Roads, Brighter Future (BRBF) initiative began in 2006. The goal of the BRBF was to have 85 percent of Missouri’s major roads in good condition by the end of 2011. Each of the department’s districts developed a plan to improve major routes by the 2011 deadline. By December 2009, the percentage of major roads in

Missouri DOT’s Better Roads, Brighter Future initiative led to an increase in the percentage of major roads in good condition—from 47 percent in 2004 to 86 percent in 2009.

PHOTO: MISSOURI DOT



good condition rose to 86 percent, a considerable increase from 2004, when only 47 percent of major roads were in good condition.

The original goal was surpassed 2 years ahead of schedule. The percentage of vehicle miles traveled in Missouri on major highways in good condition has jumped from 58 percent in 2004 to 86 percent in 2009. These two asset management initiatives, bolstered by a robust performance management process, have produced results that have helped to rebuild the public's trust in Missouri DOT.

Practical Design

In 2004, the department began implementing practical design, which challenges project engineers to use nontraditional design methods to develop efficient solutions for project needs. Practical design places a premium on systemwide improvements; its premise is that building a series of good projects will result in a great system. The approach maximizes the value of a project by ensuring that it is the correct solution—or the “right sizing”—for its surroundings.

Practical design works to achieve the purpose and need of a project so that funds are saved instead of being spent on oversized items. The savings in turn allow other projects to be built and more of the system to be improved. In layman's terms, “Why drive the Cadillac when the Chevy will get you where you're going?”

Some had criticized practical design for cutting corners, but the approach adheres to two fundamental ground rules:

- ◆ Do not compromise safety, and
- ◆ Collaborate on the solution.

Practical design produced savings of \$400 million for the projects in Missouri DOT's 2005–2009 Statewide Transportation Improvement Program. The savings were invested in additional transportation projects. Since then, Missouri DOT has incorporated practical design into all projects from the conceptual stages; it has become part of the agency's way of doing business.

Alternate Bid Paving Projects

Working with the asphalt and concrete industries, Missouri DOT introduced alternate bidding—contractors can propose asphalt or concrete in bidding on construction projects. Traditionally, Missouri DOT had specified the materials. By allowing bidders to determine which type of pavement they could deliver for the best price while meeting the performance requirements, Missouri DOT has gained a 25 percent increase in bidders and a cost savings of between 9 and 10 percent. Since late 2003, alternate bidding of pavements has saved the state approximately \$20 million.

2009 Report Card

In 2009, ETC Institute completed an annual, comprehensive, statewide customer satisfaction survey to evaluate Missouri DOT's performance and to identify the transportation services and improvements most important to Missourians. Results were as follows:

- ◆ Customer satisfaction with Missouri DOT reached an all-time high of 85 percent, a 7 percent increase from 2008 and a dramatic increase of 17 percent from 2003.
- ◆ The percentage of customers who are “very satisfied” is 24 percent, compared with 5 percent in 2003.
- ◆ The percentage of customers who view Missouri DOT as the state's transportation expert is 91 percent, up 6 percent from 2008.
- ◆ Eighty-nine percent trust Missouri DOT to keep its commitments.

A Way of Doing Business

Organizational change elicits many responses—skepticism, rebellion, predictions of failure—in addition to the perceived impact on employees. In the 5 years since Missouri DOT began its performance management journey, the doubters have become believers. At all levels, performance management is no longer considered extra work, but the way of doing business. Performance management ties

The use of practical design in Missouri DOT's I-64-I-70 interchange project produced a cost savings of more than \$37 million. The method has saved Missouri DOT \$400 million from 2005 to 2009.



Photo: Missouri DOT

together programs and projects across the agency and has created a momentum for producing results better, faster, and cheaper.

Performance management and asset management work together at Missouri DOT; asset managers receive the support they need to make improvements. At Missouri DOT, asset management is the performance management system for highways.

As the steward of the state's transportation assets, Missouri DOT is responsible for providing the best value to Missourians for every dollar spent. A mindset of continuous improvement to achieve expected results permeates the department as managers identify new ways to gain cost and time savings. Front-line employees have contributed to the development of process improvements in administration and business services, reduced levels of fleet and equipment, and in some instances, have reduced human resources.

Savings and Investments

The goal is to save money to invest in roads, for example:

- ◆ For projects completed in the 5-year period from 2005 to 2009, final costs of \$6.321 billion were within 1.02 percent of programmed costs, or \$64.8 million less than the programmed cost of \$6.385 billion.

- ◆ Vehicle fleet size decreased by almost 100 units in 2009 and has decreased by more than 250 units in the past 2 years.

- ◆ From 2008 to 2009, fuel consumption decreased by 6.8 percent, conserving approximately 600,000 gallons of fuel.

- ◆ The percentage of vendor invoices paid on time in 2009 was 96 percent compared with 82 percent in 2006, gaining on-time discounts and better bids from vendors.

- ◆ Process improvements, a streamlined bidding process, and innovative contracts have lowered project costs with more bids per job and with contractors offering innovative ideas and construction techniques.

- ◆ Best practices have been identified and implemented for mowing, to save time and reduce the need for expensive equipment.

Effective Tool

Asset management incorporated into an organizational performance management system is an effective management tool at Missouri DOT. The success of the business model is well documented through significantly improved performance.

The continued success of the agency depends on a sound performance management system that

PHOTO: MISSOURI DOT



A Missouri DOT vehicle travels along a rural road. The department has decreased its fleet size significantly in the past 2 years.

encompasses all aspects of operating, maintaining, and expanding the transportation assets, with the flexibility to adapt to customer needs and an uncertain funding environment. Those at Missouri DOT who vehemently opposed performance management 5 years ago would now be the first to defend it—and to fight to save it.

Developing Asset Management Programs for Airports

MARCI A. GREENBERGER

Like other transportation organizations, airports have limited resources. Airport managers therefore are looking for efficient and effective ways to manage airport assets and infrastructure. Some airports already gather and analyze data on available assets, using technologies developed for specific purposes, such as pavement management or computer maintenance management systems. These systems usually are not available organizationwide and are not managed and maintained for such uses. Centralizing the data for all assets, however, can enhance the ability of airport management to make effective financial and strategic decisions. Further research is needed to provide airports with an approach to asset and infrastructure management that includes physical, financial, and human resources information.

TRB's Airport Cooperative Research Program (ACRP) is addressing this research need through Project 01-16, Asset and Infrastructure Management for Airports. The objective is to develop

- ◆ A primer for executive-level decision makers at airports of all sizes, to provide an overview of an asset and infrastructure management program, presenting the components as well as the benefits and costs, based on experience; and

- ◆ A guidebook on developing and implementing an asset and infrastructure management program that (a) captures best management practices and (b) assists in incorporating the programs into airports of all sizes.

The research project is under way through GHD Consulting, Inc., with completion scheduled for winter 2012. For more information, visit the ACRP website, www.trb.org/acrp.

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