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WHITE PAPER / **PROGRAM MANAGEMENT TECHNOLOGY**

STREAMLINE PROGRAM MANAGEMENT WITH DATA VISUALIZATION

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Successful capital program implementation is the culmination of timely, effective decision-making. However, as more technologies are introduced to streamline specific tasks, critical information becomes more fragmented and challenging to access. Program management integration with data visualization generates enterprisewide value.

Advancements in business technology are marked by the automation of time-consuming, labor-intensive tasks and processes. Scheduling software, for example, significantly reduces the time it takes to produce, modify and update schedules for large, complex programs while minimizing the risk of human error. Cost estimating and forecasting software pulls data from numerous sources as it is entered to provide accurate, near-real-time reporting on cost performance.

Program management presents a challenge to traditional automation solutions. Program and operational leaders rely on information to make decisions regarding planned and ongoing work. Those decisions can directly impact schedule and cost outcomes. However, with increasingly fragmented information housed in specialized programs, decision-makers can spend increasing amounts of time sorting and analyzing information.

DATA VISUALIZATION

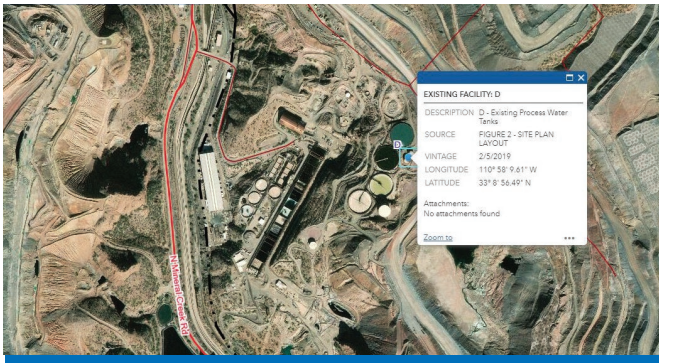
A missing link in most program management tools is the automatic dissemination of relevant data in a usable and consolidated format. What makes data usable varies widely across organizations and is dependent on the roles of each project stakeholder and personal preferences. A chief operations officer at a mining company, for example, requires clear visibility across an enterprise that could consist of multiple operating units and potentially hundreds of locations worldwide. This individual also needs to be able to analyze site-specific data to monitor project progress or manage issues.

Traditional reporting mechanisms typically display results in bar charts or network diagrams. This type of presentation can complicate site-specific decision-making or supporting role-specific requirements. Instead, program stakeholders often must extract data from reports manually to pinpoint information correlated to work locations. In contrast, data visualization often references site-specific data from multiple platforms within a geospatial (map) format to provide instant access to all current site data, such as cost, schedule, permit status and construction commitments.

ENHANCED PROGRAM MANAGEMENT

Program management tools with data visualization do not replace existing tool sets. Rather, tools such as OneTouchPM® by Burns & McDonnell integrate with existing and planned tools, as well as industry-specific tools, to provide a centralized point of information for all stakeholders. By integrating programs and all program stakeholders under a common program management tool, owners and operators are able to streamline their construction and operation efforts and efficiently respond to changing conditions or incidents.

Construction projects represent phased, highly sequenced activities involving a wide array of vendors and contractors, each with a specific scope of work. Efficient notification to relevant stakeholders of predecessor task completion is critical to maintaining cost and schedule requirements. Program management tools that provide top-down integration of project teams, including all vendors and subcontractors, allow for automated notification and the dissemination of requirements.



WHAT IS OneTouchPM?

OneTouchPM® serves as a collaborative data gateway customized for Burns & McDonnell clients. It provides visual access to all project data, building continuity through all project phases. This browser-based system integrates real-time data from disparate systems into a web dashboard accessible to all team members. It includes a reporting module that allows view-based, real-time queries and reports to be displayed on screen. By providing a geospatial control center to manage each aspect of a project, OneTouchPM minimizes errors at the job site by efficiently delivering critical information to all decision-makers and stakeholders.

For example, Vendor A requires notification that a permit is in place before beginning site grading work. Traditional processes would have the environmental team contact the project manager to notify him or her of approved permits and the requirements/commitments to comply with each permit. The project manager then notifies Vendor A. With a program management tool, the project manager and Vendor A are simultaneously notified of the permit status, enabling Vendor A to immediately begin work (unless otherwise specified).

The use of a central program management approach also enables active decision-making in the field to efficiently respond to changing conditions or unexpected delays. For example, an incident, such as flooding, could temporarily shut down construction activities at Project Site A. The project manager in this scenario can review work requirements at nearby project sites and reassign resources to those sites to maintain productivity until work resumes at Project Site A. The project manager can then review available assets to reassign to Project Site A in order to get back on schedule following a delay.

Streamlined decision-making and notifications have resulted in substantial improvements in program cost and schedule performance. In the power industry, clients with large ($1 billion or more) capital programs, representing hundreds of project sites across large geographic regions, have realized cost savings from 4% to 10% and early program completion. City governments are able to use such tools to coordinate work between departments. For example, a water department can plan water main replacements in coordination with the transportation department's planned road improvements to reduce overall costs.

PORTFOLIO MANAGEMENT

The evolution of program management to portfolio management is a trend developing across a wide variety of industries. Portfolio management differs from program management in that it encompasses planned and active projects across the enterprise. The benefits of an enterprise portfolio approach include enhanced cash flow and optimized capital investment performance and value.

Best practices in capital investment portfolio management call for centralized, digital tools that facilitate collaboration, standardize project evaluation processes, and provide an accurate view of past, current and forecasted portfolio performance. Transparency and insights from across the organization enable functional groups, such as the supply chain organization, to better plan work and identify opportunities for enhanced productivity and cost savings.

Organizational silos are broken down to eliminate pet projects and one-off investments that do not align with enterprise strategic objectives, which can result in substantial reductions in overall spending. Capital prioritization and risk-based planning are proven practices in parallel industries. Water, power, and oil and gas organizations have achieved up to 30% reductions in capital spending and reduced risk as a result of initial enterprise priority-based planning efforts.

MITIGATE MINING COMPLIANCE RISK

Mining operations are among the most heavily regulated from an environmental standpoint. With data visualization, corporate-level and on-site environmental health and safety managers have real-time or near-real-time access to the status of their permits; restrictions associated with each permit; and commitments made to fulfill permit requirements. If issues arise, such as a spill, corporate leaders hundreds of miles away can monitor response, make timely decisions using real-time data and see progress updates within their dashboards.

Centralized document storage and automation of safety reports further streamline environmental health and safety operational requirements. Data trending and analysis enables faster identification of trends at the enterprise and project levels. Field data is backed up electronically, and all environmental and safety data is stored within a central document repository, which further streamlines operational requirements by creating an automatic audit trail for regulatory bodies.

COST VS. VALUE

Business technologies and greater connectivity generate ever-increasing amounts of data at the project and enterprise levels. While these technologies have streamlined functional tasks, they have not enhanced the decision-making process. Rather, managers and decision-makers are increasingly burdened with an overload of information that takes significant time and effort to analyze. Each new technology adds to the challenge.

Program management tools, which encompass best practices and project controls, are not industry-specific and typically do not require comprehensive enterprise IT changes. Today, these tools integrate with existing platforms, such as AutoCAD, Primavera P6 and Oracle financial platforms, to aggregate and disseminate data in real time. Online dashboards filter information based on an individual's roles and responsibilities.

Unmanned aerial vehicles (UAVs), for example, have the potential to dramatically reduce on-site operational costs by reducing the need to deploy survey teams and other staff for specific business functions. UAVs can provide visual data to enable site-specific calculations of material movement; identify environmentally sensitive areas and areas that pose safety risks; and validate environmental compliance requirements. Rather than UAV data merely adding to the increasing flow of project data, integration with a project management tool provides richer levels of detail to site-specific work and facilitates faster decision-making.

The ability to seamlessly integrate with existing and planned technology platforms is critical for organizations operating within narrow profitability windows. Cost associated with IT upgrades, particularly within construction-intensive industries, has long inhibited widespread adoption. However, program management tools with data visualization are designed to integrate with existing and emerging tools, prolonging the life of previous IT investments.

Program management with data visualization generates value across the enterprise. Functional groups can better plan and optimize resources. Project managers are able to adapt in the field to maintain cost and schedule commitments. Capital projects are prioritized based on value and overall benefit to the organization. Quantifiable value gained through access to relevant, usable data provides companies with an immediate and sustained return on their technology investment.

BIOGRAPHIES

TOM ROSENBAUGH, PMOC, EVMP, is the project controls department manager and program manager for Canadian operations of Burns & McDonnell. He holds multiple certifications from the Earned Value Management Institute as an Earned Value Management Professional (EVMP), AACEi as a certified Planning and Scheduling Professional (PSP), the Project Management Institute as a PMI-Scheduling Professional (PMI-SP) and the ALLPMO Network as Project Management Office Certified (PMOC). He is a former U.S. Army Ranger and has over 15 years of project experience in multiple single-site and linear project fields. He also heads the unmanned aerial systems program for Canadian operations.

ROBERT WOLFE serves Burns & McDonnell as the corporate program management director, drawing on 25 years of project management experience. Prior to joining Burns & McDonnell, he served as a contract employee on the $1.4 billion Middletown-Norwalk Transmission Project. As project controls manager on the Middletown-Norwalk project, Robert initiated the program's cost controls and database management processes. His project controls experience, management style and multifaceted skill set were key components to completing the project one year ahead of schedule and significantly under budget. He is a global executive council member for the Project Management Institute.

ABOUT BURNS & McDONNELL

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