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PROJECT MANAGEMENT REPORT 2019

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OUR COMMITMENT

I am coming up on my second anniversary serving on Dewberry's board of directors. Recently, I was asked to take on talent management as one of my main areas of focus. How fortunate I am to have this assignment, because Dewberry's people are dedicated, genuine people. Dewberry is a great place to work, and I'm excited to support the mission of talent management.

Dewberry employees also wholeheartedly embrace the Dewberry at Work value, "Put the client first. Promote their broader interest." I see this commitment reflected in the articles in this issue of *Dimensions*. Each of the topics are critical and perennial to effective management of projects and programs.

Each leader has articulated insight synthesized by years serving clients and organizations and offers strategies and decision-making criteria. They also offer much more insight than managing projects: it's managing people, managing change, and building teams that work well and support each other. It's clear to me that Dewberry's people put the client first with curiosity, attention to detail and problem-solving, and a generosity of spirit in sharing their knowledge. 🍇

GERALDINE KNATZ, PhD
Dewberry Board of Directors

IN THIS REPORT

EDITOR'S NOTE
Beyond the changes to *Dimensions'* look and feel that you enjoyed last quarter, the fall edition seeks to provide insight on common issues. To identify what to address, we asked our project and client managers what they were hearing from you, their clients; and through the articles in this issue, our goal is to lend insight and experience. As always, we welcome your feedback, including what other topics might be helpful in the future.

ON THE COVER
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Fairfax and Loudoun Counties, Virginia

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MEGA-PROJECT MANAGEMENT:
STRATEGIES FOR SUCCESSFUL DELIVERY

by David Mahoney, PE

Executive Vice President and Operations Manager, Alternative Project Delivery

The design industry has seen a proliferation of mega-projects in recent years, particularly in the civil infrastructure arena. Mega-projects are not only massive in scale and scope, they involve managing large budgets, diverse teams, ambitious schedules, and a formidable amount of risk. To be successful, these projects require, at a minimum, solid expertise and exceptional project management.

Mega-projects are often identified by their impressive budgets—typically $1 billion or more. Years in the planning, these projects are high-visibility, high-impact initiatives carried out under the watchful supervision of government agencies and authorities, or in some examples, resourceful public-private partnerships. In every case, these projects proceed, as they should, under intense public scrutiny from the earliest conceptual phases through construction completion.

DRIVING INNOVATION

One of the significant benefits to taking on large-scale, design-build projects is the opportunity to innovate. These projects have many components, all subject to value-driven analysis and ideas to save money, trim schedules, and conserve natural resources. The magnitude of these projects, along with the inherent risk, incentivizes teams to look closely at every detail in terms of the site, use of materials, construction methodology, and ways to optimize efficiency and enhance delivery.

IT ALL COMES DOWN TO PEOPLE

Mega-projects are "big risk, big rewards" projects. Success comes down to that trusted team, and people who are committed throughout the life of the project.

These projects are by their nature complex and challenging, so issues arise on a daily basis, requiring clear and frequent communications. Staff continuity is also vital; changing team members while a project is underway—in particular a project manager or task manager—can introduce significant risk. It is important to have a consistent team that works together constructively—not combatively—with people at every level of the team who view these projects as true career highlights. The opportunity to work on a mega-project doesn't come along every day. At Dewberry, we are fortunate to have a team that stands ready for the challenge.

> " MEGA-PROJECTS ARE **BIG RISK, BIG REWARDS** PROJECTS. "

Our decision to pursue mega-projects is based on our ability to meet several criteria:

OUR EXPERTISE

This is the bottom line. We must have the expertise— in-house or through strategic teaming— to provide all of the services required with complete confidence. There is no opportunity for a learning curve on these massive projects.

A TRUSTED TEAM

Mega-projects require trusted partnerships. People involved with the day-to-day delivery of services are at the heart of these teaming arrangements, but a successful team also involves solid company support from every part of our internal organization as well as every participating consultant and contractor, starting at the top of the organizations.

CLEAR SCOPE UNDERSTANDING

A careful evaluation of the project scope requires time and a willingness to commit to the pre-proposal schedule and financial demands necessary to create a thorough and effective response. This also enables the team to establish mitigation measures early on to minimize risk.

STRONG PROJECT CONTROLS

From start to finish, mega-projects require reliable and consistent project controls, from the scope evaluation to cost estimating, and from scheduling to the production of documents.

FOLLOW-THROUGH

With many mega-projects involving design-build delivery, it is vital that the design firm stay engaged throughout construction, reviewing shop drawings and RFIs and answering questions. The engineering commitment continues through the final day of construction.

ON THE ROAD: TEAMING UP WITH SHIRLEY CONTRACTING

The latest phase of the widening of State Route 28 in Northern Virginia—an award-winning mega-project that has spanned 15 years—is among the more than 40 design-build projects completed by the team of Dewberry and Shirley Contracting Company, LLC, in Virginia and Maryland. Proven partnerships, with trusted teams working closely together, are vital to the success of large-scale, high-profile initiatives.

THE SILVER LINE: A PROJECT WITH MEGA IMPACT

Mega-projects such as the $1.18 billion second phase of the Dulles Corridor Metrorail, also known as the Silver Line, require an "all-in" commitment from participating design and construction firms. Dewberry's extensive, six-year involvement in the engineering and construction inspection for Phase II has involved more than 15 business units, with designers contributing from across the firm's national network of offices as well as the construction inspection team. The 11.4-mile extension, nearing completion by the design-build team of Capital Rail Constructors for the Metropolitan Washington Airports Authority, is set to open in 2020.

RESOURCE UTILIZATION

by Jean O'Toole, AIA, PMP, LEED AP BD+C, NCARB
Associate Principal

5 TIPS
FOR RESOURCE UTILIZATION

1. Constantly engage all active professionals on projects to keep tasks and assignments on schedule and budget

2. Understand how much time is spent on each task; use that information for the next task or project

3. Create a comprehensive project plan and use it to ensure everything is going per plan, or update as needed

4. Know the capabilities of your staff and assign tasks accordingly; and challenge them with new tasks also

5. Communication is key— be prepared for any changes that might come up, including budget changes and updated project schedules

How do you manage team members on a project and know they are reaching their full potential? Resource utilization is a key component of project management and focuses on how each member of the team is being utilized on a project. Analyzing project schedules and team productivity gives managers a way to effectively organize projects, while maintaining knowledge of each team member's activities.

HOW IS RESOURCE UTILIZATION MEASURED?

Resource utilization is measured using formulas and tools in Microsoft Excel and Project to compare hours worked to total potential and planned hours. Managers receive reports that allow them to review and monitor how each team member is being utilized on billable and non-billable projects. This helps balance workload between professionals, and serves as a resource for employees to set goals.

In our office, we set utilization goals based on the employee's role in the office, previous experiences, and professional goals. Generally, entry-level staff have higher billable utilization goals while senior-level staff may have lower utilization goals. This combination of billable and non-billable time allows for the balance of business development,

marketing, and training. Balancing these priorities helps increase sales, manage client expectations, and provides a collaborative work environment. Utilization is just one of the measurements of resources.

ALIGNMENT OF BUSINESS AND EMPLOYEE GOALS

It can seem like resource utilization just focuses on numbers and productivity, but it is important for the manager to keep in mind the humanistic side. Understanding where our professionals' interests lie and where they want to grow their career is crucial to keeping your employees engaged. We strive to provide all employees with well-rounded opportunities to help them focus on career growth. This is especially important for entry-level architects seeking licensure who are required to fulfill hours in specific tasks under the mentorship of licensed architects to sit for the licensing exam.

Resource utilization is a great tool to help manage a variety of project types and sizes and keep employees on task and engaged. As our firm is involved in more complex projects across the enterprise, it is important for project managers to maximize staff utilization and engagement.

REFINING OUR EMPLOYEE EXPERIENCE TO IMPROVE RETENTION

by Dave Francis, CCEP

Chief Compliance and Human Resources Officer

I have had the great opportunity to speak for the last five years on employee leadership topics at WaterJAM, a conference attended by water agencies and utilities. Most people I spoke with this year shared their frustrations and concerns about retaining their staff—an issue of concern I hear from many industries.

CREATING A PERSONALIZED EMPLOYEE EXPERIENCE

A feeling of being connected with your organization is the most critical aspect of retention for employees. I've heard from dozens of Dewberry employees that one of the most impactful things for them was receiving a phone call from Chairman Barry Dewberry when they first came on board. It seems so simple, but it helps to make our employees know they matter—demonstrating how they play a role in the bigger picture.

Another success story for recruitment and retention that we are trying to replicate throughout our firm is what Senior Vice President Shepard Hockaday is currently doing in our Raleigh, North Carolina, office. His level of involvement as a hiring manager—and his hands-on approach

nurturing candidates from the application, hiring, onboarding, and throughout their time here with Dewberry—is showing results with one of the lowest attrition rates in the firm, even while experiencing significant department growth. Shepard doesn't only make himself available to his team, he also actively involves them in the vision and strategic plans for his department and its organizational structure. Shepard has also taken the unique approach of getting the team's and the candidate's input on the position during the interview process, which in turn maximizes the strengths of the candidate. Finally, Shepard regularly contacts good candidates, letting the candidate know that he is excited about them joining the firm and the ways they will make an impact to Dewberry right from the start.

We are also performing a comprehensive analysis of our offices and business units that are struggling to hire and retain staff. My team has committed to a lot more hands-on coaching, including stay interviews, gleaning data from exit interviews, developing tailored development plans, and exploring restructuring options. We offer best-practice training to bolster our managers' approaches to retaining our employees. Fundamentally, in our culture that revolves around building strong client

relationships, we are cultivating relationships with our employees in the same way.

DEFINING AND REFINING JOB ROLES

Another way organizations can differentiate themselves is by defining their career paths for all job functions. There is a demand for clarity regarding what is possible in a role, whether it's growth opportunities, the ability to work in multiple services, or flexibility between office and field work. Candidates want to know where they can expect to be in five and 10 years, as well what options and cross-training are available.

While human resources can advise and help develop a company's leaders on the strategies for successful retention, the practical application is in the hands of each and every manager. It comes down to analyzing and replicating the retention success stories of your organization and providing personalized support for candidates from the moment their resume comes in until the day they retire. Although understandably a daunting endeavor, retention of talent should always be at the forefront of your organizational vision and strategy. 🍇
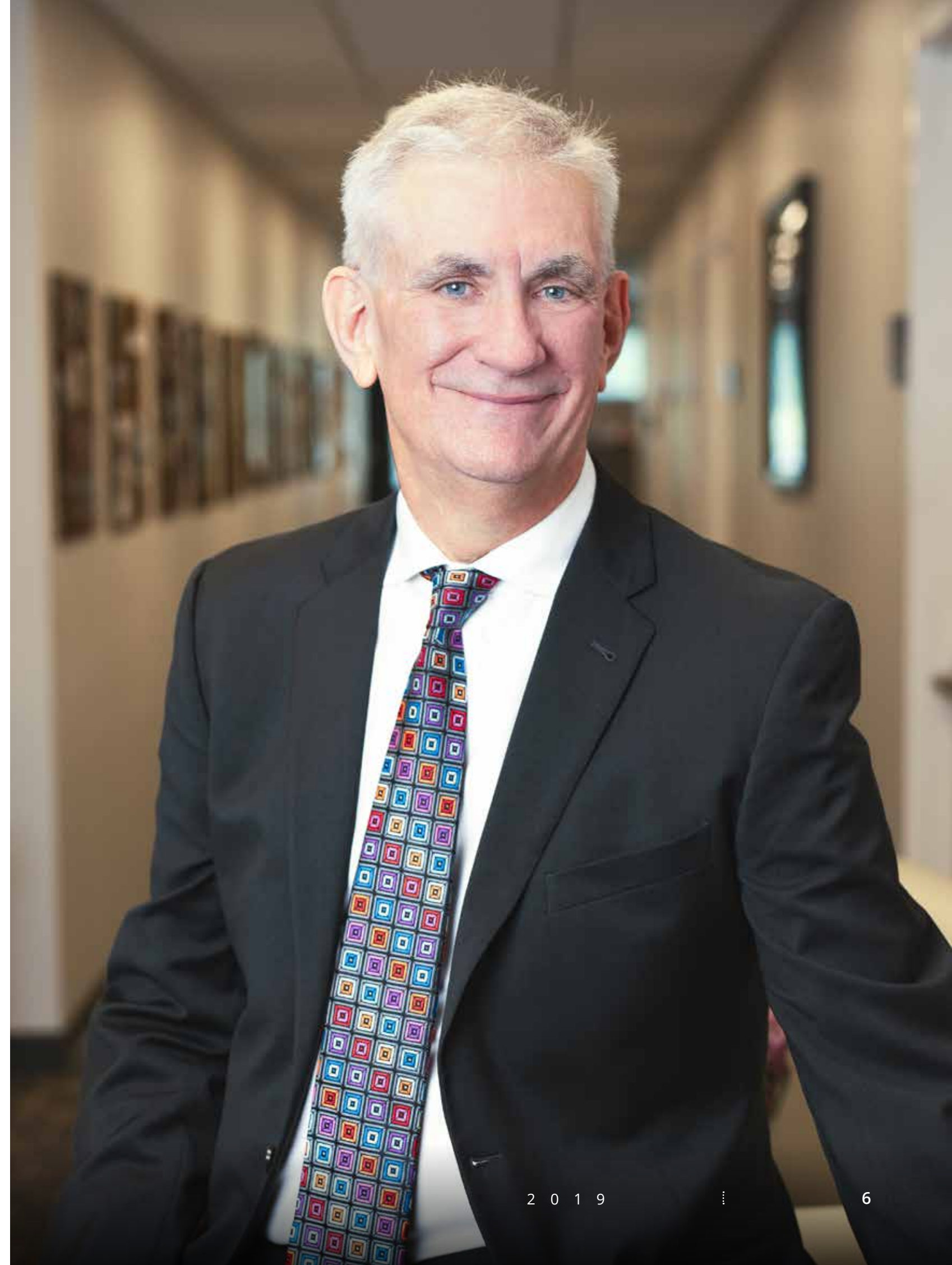
ASSET MANAGEMENT:
HARNESSING DATA FOR BUSINESS INTELLIGENCE

Rishi Immanni, PE, GISP
Associate in Atlanta

Ken Logsdon, Jr.,
PMP, GISP, ENV SP
Senior Associate in Fairfax

Patrick Wade, PE
Associate in Raleigh

As organizations look to optimize resources and prepare for the future, many seek ready access to data regarding capital assets. Engineering advisors play a key role in helping clients identify, document, and access this information to support maintenance and capital improvement projects.

Under the leadership of asset management specialists **Rishi Immanni, Ken Logsdon, and Patrick Wade,** the firm is helping clients nationwide to align technology successfully with cost-effective business practices and decision-making. In this roundtable, the team reviews the benefits of sound, data-driven management to optimize the life cycle of assets.

What are the challenges that clients face in optimizing their asset management programs?

Logsdon Many organizations, including water/wastewater utilities, oil and gas companies, ports, and public agencies, manage large inventories of facility and infrastructure information. They can be challenged by the pace of growth and its stress on legacy processes and technology. Staff may not have the skills to keep up with technological advances, or as a workforce matures and people retire, institutional knowledge may walk out the door. Critical data often exists in silos, or it may still exist only on paper or in a person's head, making it difficult to access, mine, and share. We often find that clients have large quantities of data, but they can't access it in a timely or effective manner. They are data-rich but information-poor.

Are there other drivers that are leading clients to strengthen asset management tools and processes?

Wade Yes. It's important to remember that most underground infrastructure in the eastern U.S. has aged beyond its useful life. Components are failing, yet at the same time, many service areas are growing and facing increased demand for their services. The need to manage the life cycle of infrastructure assets efficiently is greater than ever before. There may also be regulatory drivers: America's Water Infrastructure Act of 2018, for example, calls for the use of asset management plans and best practices for public water systems. Clients are recognizing the importance of harnessing institutional knowledge and large repositories of data to maintain and improve systems, reduce risk, and save money. It's working smarter, not harder.

Are you seeing transformational improvements in the way clients are managing their assets today?

Logsdon Yes. We're seeing system-wide improvements that reduce or eliminate data silos, enhance workflows and communication, consolidate and upgrade systems, and streamline operations and maintenance. We help clients identify vital records, the custodians that steward the information, and the risks each asset poses. Information must be accessible, turning intelligence into actionable decision-making. The Prince William County Service Authority, a water and wastewater utility in Virginia, is a good case in point. We performed a business process analysis and helped as the authority created a master data strategy. We then helped implement a CityWorks asset management system, refine standard operating procedures for the land development program, and create more efficient O&M procedures; and are now continuing to support enterprise asset management and business analytics for vertical assets in their facilities and water reclamation plant.

Immanni The benefits are both practical and far-reaching. Our water/wastewater clients, for example, will see clear advantages in terms of customer service, cost, and resilience. If a component fails, these asset management tools can tell you what the environmental impact will be, the cost, the likely service delay, the impact to the transportation network, and so on. It allows for smarter planning on a day-to-day basis.

Wade Today's asset management tools and processes position our clients for stronger decision-making on capital improvement projects for both vertical and horizontal assets. In Wake County, North Carolina, for example, we are conducting a multi-year facility condition assessment for nearly 100 county-owned buildings. We created a comprehensive database with inspection data, along with estimated costs for repairs, upgrades, and replacements. The database is being used to plan and budget the county's capital improvement and maintenance projects. They now have an efficient approach to addressing urgent projects, while conserving budgets and avoiding higher costs in the future.

What's next in terms of technology for asset management?

Immanni We are constantly innovating to develop effective, customized tools for our clients. DimensionalView®, for example, is a map-based project management tool for clients in the infrastructure, power, and oil and gas markets. Next up? Artificial intelligence. Free platforms are already available to support asset management and provide even more impactful insights to optimize the life cycle of assets.

IMPACTFUL AND COST-EFFECTIVE

Many government agencies and companies have realized that data is one of their most important assets. Today's technology in web-based analytics allows for "big data" to be analyzed and accessed for impactful, cost-effective results. According to Dewberry Associate Vice President **Mat Mampara, PE,** "Advanced technology provides a powerful tool for capturing and interpreting millions of records to assist in asset management, capital planning, risk assessment, and program evaluation and validation. With the use of interactive data visualization software and customizable dashboards, our clients can easily navigate large datasets to help with planning and decision-making. These tools are a game-changer for our industry."

CHANGE MANAGEMENT

by Lisa Roger
Chief Information Officer

Change management is a systematic approach, whether it is cultural, operational, or organizational change. It is a formula that must be followed to achieve a successful, consistent outcome. One of the biggest factors in creating a positive outcome is a well-planned approach and leadership communicating the change, clearly and regularly.

BE ADAPTABLE

The most important qualities of an effective leader are the ability to listen, be adaptable, and recognize and manage change. It is important for a leader to identify leadership qualities in others, while also having the ability to listen; think critically, and coach employees to problem solve.

A strong leader is someone who is creating a learning organization, full of divergent thinkers. They are leading their employees to articulate their vision and inspiring employees to get behind a new mission or project.

BE PREPARED

For change to be successful, it is important for a manager to think through the changes up front, whether that is quickly in their head for something small or a more thoughtful and methodical approach for change that will have a greater impact, before they share it with employees or other members of the organization. A manager needs to consider who is positively and negatively impacted, and who will be the champions and resisters. It is crucial to do this careful analysis and align the plan with potential road blocks, risks, and objectives.

The secret to true change management success is looking at the culture of the organization and who the decision makers are. These pieces have to be managed just as carefully as the plan on how to implement the change. Getting everyone on board and making sure the organization is ready for a change are imperative.

Change cannot just come from the top of an organization, but needs to be accepted and championed by members from across the organization, as well as feed into the firm's overall strategic objectives. However, with a strong leader, a well-planned approach, and a focus on the seven keys can help manage change, however big or small. 🍇

7 KEYS
FOR CHANGE MANAGEMENT

1 Transparency
Be holistically transparent about the process, and focus on all strategic and tactical elements

2 Have a system
There are hundreds of tools, such as ticket management systems to process management systems; it is important to have a system and take the time to apply it

3 Clear vision
Make sure your team understands the vision and then have them own part of the outcome; and most importantly, hold them accountable

4 Celebrate the small and big wins
Cultivate positive energy and excitement around what is going on: the small wins up front help create that positive energy to push the project across the finish line

5 Build momentum
Trust that your leaders and champions of change can get the rest of the team to the finish line, but validate that they are making progress toward that end goal

6 Understand how to fail
Know when to pull the plug and step away from something, and communicate to everyone involved why it did not work

7 Never waste a good failure
Convert it into a learning opportunity and use those lessons learned for the next time

SCOPE CREEP AND RISK MANAGEMENT

by Megan Schulze, PE, PMP
Project Manager

The primary role of a project manager is to manage the triple constraints of a project—budget, schedule, and scope. Scope creep refers to uncontrolled change or growth in the scope. It is important to remember that a scope is often a living document that needs to be continuously managed, and sometimes changed, to meet the original intent of a client's project. Scope creep can result from a number of reasons, including a change in requirements or complexity, ambiguous or unclear scope, going beyond the intent to achieve perfectionism, underfunding, or personnel changes.

SCOPE CREEP MANAGEMENT

By successfully managing scope creep, we are creating a win-win solution for both the consultant and the client. Generating a thorough scope up front is in the best interest of everyone, and it is preferable to work with a client to help develop a strong scope. However, there are often times where an ambiguous or unclear scope leaves room for interpretation, or deviations in scope that arise only when you are actively working on a project. In order to deliver the best product or service, it is important to have a clear understanding of the client's wishes, their resources, and overall effort to complete the scope.

Managing project scope internally requires that each team member possess a thorough understanding of the scope requirements, the client's goals and expectations, and each member's role. Establishing regular touch-points, updating the team when new developments arise, and communicating any scope changes — whether positive or negative — are key to managing scope and meeting client expectations.

RISK MANAGEMENT

Managing risk is intrinsic to scope management and begins first with anticipating risk and responding to causes before the project starts and is impacted. Risk analysis is performed during the planning phase of a project and should be considered before there is ever a decision to pursue a project.

Risk responses can include:

- Avoiding the risk through scope modification
- Transferring the risk through contracting
- Mitigating the risk by taking actions to reduce probability or impact
- Accepting the risk if it is normally low-probability or low-impact

CHANGING SCOPE IN A POSITIVE WAY

An evolving scope is sometimes inevitable depending on the project, and is not always a bad thing. For example, if a healthcare client expands mid-project and expands the scope to include additional specialty areas—geriatrics, pediatrics, oncology—an evolution in scope is necessary and welcomed. When coming across change, it is important to create a scope that meets the client's needs, encompasses a realistic budget, and sets expectations for everyone involved. The key to managing scope and risk is being creative in finding solutions that will result in a successful project, delivered on time and within budget, all the while deepening trust in the relationship between client and consultant. 🍇

PROGRAM MANAGEMENT

by Tony Buitrago, PE, PMP
Associate Vice President

Program management can be defined as the oversight of a large-scale effort to manage multiple projects sharing the common thread of a cohesive and singular goal. Often, the effort requires a group of professionals in a program management office (PMO) orchestrating the component projects to deliver the final goal. Equally as important, someone with robust experience oversees the PMO. For example, when President Kennedy announced in 1961 that he wanted to land a man on the moon by the end of the decade, a NASA team of engineers and scientists was picked to lead this pursuit. Their Mercury, Gemini, and Apollo missions all culminated in the successful completion of this goal on July 20, 1969.

If each mission had not been planned and executed independently, with the larger goal in mind, the mission could have failed. It is very similar in the engineering, architecture, and construction industry. Successfully running a program requires exceptional communication with stakeholders, the proper execution of component projects, and the skillful management of their inherent risks.

MANAGING PROJECTS

Because program management typically covers many projects across multiple years, program managers become experts in balancing the perennial equation of properly timed execution, schedule, and resources. Best practices often involve the setting of clear schedule and budget metrics to harmonize their execution toward the ultimate program goal. A robust programs control group, working as the PMO's eyes and ears, measures the execution of these metrics, reports variances from the goals, and proactively implements remedial actions, ideally resolving issues prior to these becoming hindrances to the program's ultimate goal.

RISK-BASED MANAGEMENT

Managing potential risks is essential to the success of a program. Crucial steps at the program's inception include developing a comprehensive risk assessment inventory to forecast different risk categories (e.g., environmental, budget, regulatory, technical), crafting mitigation strategies, assigning responsibility for executing these, and most importantly, tracking risks for the duration of the program.

A recent example for risk management and stakeholder communication involved a large housing authority rehabilitation project in New York City. The owners identified significant risks in the program's implementation as it would impact 60,000 residents in the affected buildings, many with different cultural and linguistic backgrounds. To mitigate these risks, the PMO executed a community contact effort, performing 37 community events and conducting 49,000 individual calls in their native languages, providing building-specific messaging to residents explaining what was happening, presenting the temporary impact they would experience, and detailing how the finished project would improve their quality of life. Just as importantly, this community contact effort provided the PMO valuable input about resident concerns and many unforeseen risks. Their input ultimately helped PMO personnel shape the construction process and effectively mitigate many potential risks.

COMMUNICATION

As seen in the prior example, during the life cycle of a program it is imperative to have someone, or an entire team, dedicated to communicating with the program stakeholders. Providing timely status reports and tying these to the ultimate goals of the program is key to addressing stakeholders' potential concerns. Most importantly, identifying and resolving unforeseen issues raised by stakeholders will go a long way in building trust with the PMO.

Program management is not just executing one main goal, but a culmination of many smaller efforts. It is imperative to properly plan, execute, and communicate the roadmap to this end goal — whether that goal is improving the quality of life for residents or advancing to the next level of technology. Strong program management revolves around the key elements of program and project metric management, communications, and the preemptive management of foreseen and unforeseen risks.

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CONSTRUCTION MANAGEMENT
SIX KEYS TO SUCCESS

by Doug Frost, PE
Senior Vice President

Construction management focuses on managing scope, cost, and schedule in order to deliver a successful project. Here are six critical elements to keeping projects on track:

MANAGE THE SCHEDULE

Make the most effective use of people, equipment, systems, technology, materials, and funds.

FOLLOW THE PLAN

Create a detailed project management plan (PMP), defining objectives, expectations for quality, and roles and responsibilities. Plan the work and work the plan.

ESTABLISH EFFECTIVE PROJECT CONTROLS

Document management and data reporting are critical: keep track of everything from RFIs and invoices to test results, progress meetings, inspections, and commissioning.

TRACK COSTS AND MANAGE CHANGE ORDERS

Monitor budgets and changes regularly to avoid surprises.

MANAGE QUALITY

Do it right the first time around…rework is costly and often detrimental to the construction schedule.

MONITOR RISK AND SAFETY ISSUES

"See something, say something." Work closely with the contractor to support a safe work environment. Consider scenarios, plan, and mitigate.