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THE KEY TO OPTIMIZING YOUR WATER UTILITY

A Guide to Operations Management

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From drinking and cooking to bathing and cleaning, water is essential to daily life. Which is why water utilities, just like you, deliver over 42 billion gallons daily to homes and businesses across the country. But, without proper monitoring and maintenance, your water assets quickly deteriorate—and those little drips add up. In fact, 6 billion gallons of water (enough to support 15 million households) is lost daily to leaking pipes and an additional 2 trillion gallons are lost annually to main breaks.

To keep everything flowing smoothly, you must continually juggle the budgeting and scheduling of preventative maintenance and long-term upgrades. To retrieve the information you need, you may find yourself digging through piles of paper records, trying to reconstruct the knowledge of a recently retired employee, or searching thousands of spreadsheet rows that are incomplete, maintained inconsistently, or not integrated with other vital data.

Imagine if you could pinpoint any potential problem looming within your system. If you knew the condition of every single component. If you had accurate maintenance costs at your fingertips. If you could project needed upgrades, reduce downtime and emergency repairs, and build sound budgets.

With a proactive operations management approach, you can.

The goal of this white paper is to help water utilities understand operations management—what it does, why it works—and begin thinking about implementing its strategies and technologies to become more effective, efficient, and productive for their citizens.

WHAT DOES THE NEW ERA OF UTILITY OPERATIONS MANAGEMENT LOOK LIKE?

Water networks can no longer be managed by educated guesses, let alone gut decisions. Successful utilities are expected to utilize digital tools capable of transforming monitoring and maintenance into an exact science. Armed with real-time data, supervisors and field workers will not only preserve and extend the service life of key assets, but also increase productivity, track ongoing tasks more thoroughly, and prepare for the future.

THE 6 KEY PRINCIPLES THAT UNDERPIN WATER UTILITY OPERATIONS MANAGEMENT INCLUDE:

01

Optimize the useful life of your water assets—and the money invested in them.

02

Quickly respond to breaks, leaks, and other compromises to your system.

03

Understand exactly what, where, when, and why work is being done in the field.

04

Supervise and support your field staff.

05

Streamline your inspection, maintenance, installation, and repair processes to ensure regulatory requirements are met.

06

Track asset and management expenses effectively and efficiently.

AREN'T TRADITIONAL APPROACHES TO WATER UTILITY MANAGEMENT ENOUGH?

No. No degree of paper record keeping or spreadsheet configuration can supply the level of granular detail and accurate information—updated to the very minute—that today's high-performance solutions offer. In fact, if today's technology has taught us anything, it's that decades-old management methods can't be trusted to accurately monitor and track assets and work orders, let alone support real-time problem solving in the field. Yesterday's approach is also incapable of capturing data that can save water utility operations valuable time and expense in the future.

Your organization's "tried and true" management method may seem adequate now. But, the next time your utility struggles to respond to a water main break or possible contaminant to your community's drinking water supply, your opinion will likely change.

WHAT MAKES TECHNOLOGY-DRIVEN OPERATIONS MANAGEMENT SO EFFECTIVE?

- **It empowers crews to make data-driven decisions.**
  Crew performance improves when workers have the tools to make good decisions at the point-of-service. A workforce equipped with superior technology produces more precise results with less time.
- **It saves taxpayer dollars.**
  Whether it's replacing a section of pipe or renovating part of a treatment plant, a technology-driven operations management strategy will help you plan intelligently, respond accordingly, and work more efficiently. By including other enterprise systems in your strategy, especially GIS, you'll experience a quicker return on your technology investment.
- **It operates in the same real time as water systems do.**
  By tracking your water utility as a dynamic whole (as opposed to static bits and pieces), supervisors and crews get an efficient, user-friendly grip on the system's strengths and weaknesses.
- **It predicts breaks, leaks, and water loss before they happen.**
  By analyzing trends and using models of the municipal water system, your utility management strategy moves from reactive to proactive.

- **It reveals a better understanding of inventory and buried assets.**
  Some prime assets sit unused for years or decades. Others remain active long after they've outlived their usefulness. The right technology adds a new layer of accuracy to the science of extending the life of prime assets, finding underutilized ones, and retiring those that are obsolete or potentially hazardous.
- **It provides modern tools for creating benchmarks and measuring outcomes.**
  Continuous operational improvement becomes easier to achieve due to the improved degree of monitored progress.

WATER UTILITY OPERATIONS MANAGEMENT PRINCIPLES ARE APPLIED TO 6 MAJOR CATEGORIES:

1. ASSET MANAGEMENT
2. PREVENTATIVE MAINTENANCE
3. WATER TREATMENT MANAGEMENT
4. METER INSPECTIONS
5. GOVERNMENT COMPLIANCE
6. OFFICE EQUIPMENT & TECHNOLOGY

WHERE SHOULD MY UTILITY BEGIN?

There is no universal solution for every water utility, even in neighboring communities. Needs, demands, and available resources can vary widely between borders. For example, one may have distinctly urban characteristics with high water demand and pollution potential, while the next may reflect a suburban or even rural density with less demand and more clean water available.

So, while a public water utility can look to other municipalities for general guidance, you need to review your operations across the board and ask these key questions:

- Where do our cost challenges exist?
- In what general areas do we need focus and improvement?
- Which systems and procedures are clearly out-of-date?
- To what extent are we completing regularly scheduled tasks in a timely and efficient manner, such as monitoring water safety and meter inspections?
- What goals do our elected officials and citizens share for bringing our water utility into a state of peak performance?

When combined with the answers to the questions above—and followed in order—these seven best-practice steps result in operations management strategy tuned and tailored to your water utility:

1 COLLECT DATA

Smart operations management is powered by data—current, accurate data that tells you exactly what assets you have and where they're located. Collecting good data is crucial to making good decisions and implementing a productive operations management strategy.

2 ASSESS CONDITION

One thorough inspection tells you how an asset is performing, how much life it has left, and whether it's worth the money you spent on it. Use condition data to assess your utility's current and future needs.

3 VALUATE

Consider the asset's purpose and place in your infrastructure, and what happens if it fails. Valuation is an essential operations management step because it requires you to prioritize your assets and the resources necessary to sustain them.

4 GAUGE PERFORMANCE

Identify the factors that measure the asset's performance. At what point is it considered faulty or unsafe? Does the public expect it to look good? Answering questions like these reveals the baseline for maintaining the asset.

5 CREATE A STRATEGY

There's a time to repair and a time to replace. Create an operations management strategy that is proactive in its scope and realistic for your organization and workforce. Use data and cost-benefit analysis to help you decide what to do and when to do it.

6 PUT INTO PRACTICE

Install, maintain, inspect, and, if need be, replace. Then do it all again for every asset in your water network. With a well-planned strategy in play, you'll steadily improve your infrastructure and the database supporting it.

7 FOLLOW THROUGH

Smart operations management is the byproduct of patience, planning, and execution. Regular, proactive monitoring is the key to working efficiently and the easiest way to ensure that assets are maintained to your satisfaction.

DO YOU KNOW YOUR USERS?

Technology doesn't guarantee that retooled water utility operations will succeed. Before choosing a solution, it's absolutely crucial to consider the needs of the people who will use the system on a day-to-day basis. Ideally, the software you select will meet the needs of people in different roles and at multiple levels of your organization.

Here's a guide to what users need in order to find success with operations management technology.

FIELD PROFESSIONAL

- **Easy to learn and use.**
  Straightforward, intuitive and friendly. No tech savvy required. Minimal training time.
- **Optimized for the field.**
  Streamlined workflow enables users to complete work accurately and on time.
- **Real-time tasks and data.**
  Easy access to real-time data no matter where the task is located.

SUPERVISOR

- **Quickly assign work.**
  Create and assign tasks to field professionals in real time.
- **Gauge progress.**
  Immediately see the progress and status of maintenance projects. Discover increased efficiencies in tracking water quality and usage.
- **Plan ahead.**
  Plan, group, and relate tasks to maximize efficiency.

WATER UTILITY DIRECTOR

- **Simple reporting.**
  Easily gather and filter data to create detailed reports.
- **Advanced analytics.**
  Understand exactly how time and money are being spent.
- **Better decisions.**
  Accurate, timely data makes for well-informed decisions.
- **Improved compliance.**
  Quickly compare utility data, including water quality, to compliance rules and regulations.
- **Focused task management.**
  Timely data optimizes time efficiencies and prioritization of maintenance.

CHIEF INFORMATION OFFICER

- **Bolster communication.**
  Use real-time data to provide citizens with utility alerts and project status updates.
- **Improve customer service.**
  Respond quickly and accurately to citizen inquiries and concerns ranging from billing to connection or disconnection of service.
- **Share success.**
  Know the moment goals are achieved—and celebrate your successes with the public.

IT

- **Minimal deployment and maintenance.**
  Cloud technology does the heavy lifting for you.
- **Maximum security.**
  Complete control of system security and permissions. Minimal administration.

WHAT ARE THE TRAITS OF GOOD OPERATIONS MANAGEMENT TECHNOLOGY?

Just like operations management strategy itself, there is no one-size-fits-all system. However, there are steps that water utilities can take to avoid mistakes, and overcome the challenges associated with researching, selecting, and implementing the right operations management technology.

Things to look for when choosing an operations management system:

1

USER-CENTRIC DESIGN

When choosing a high-performance system, consider the ease of use and intuitiveness of its design. A clean and simple interface enables workers to concentrate on the task at hand, rather than trying to muddle their way through inefficient software that makes tasks more difficult to manage and complete.

2

MOBILITY

The system you choose needs to provide optimal power and functionality for the mobile workforce. Look for a system that performs as well, or better, on a mobile device as it does in the office. That way, no matter where the asset is located, your mobile workforce has everything it needs to access and complete work accurately and on time.

3

DATA ORGANIZATION

Does the system make it easy to input, view, and find data? If not, look elsewhere. Quick, easy access to well-organized data, such as a particular asset's work and inspection history, helps your team to make well-informed decisions when performing their work in the office or on the go.

4

ADAPTABILITY

Identify your technology needs today and consider how those needs might evolve in the future. Use that knowledge to choose technology that has the ability to expand and grow with the needs of your community—especially as water use increases—and the operations that service it.

5

INTEGRATION

It takes more than one system to keep a water utility running efficiently. High-performance operations technology is the place where those enterprise systems connect. The right system integrates easily with everything from your billing sofware to your GIS platform, and will share data with them in real time.

6

CROSS FUNCTIONAL

A system should be able to meet the needs of multiple departments and areas of your organization. Organization-wide thinking—along with the communication and collaboration that makes it successful—isn't possible using a system that creates data silos. Productivity and decision making improve when every user has access to the same data.

7

AUTOMATION

To be more effective and efficient, high-performance utilites must accomplish more with less energy. Look for automation features that let the system do some of the heavy lifting for you when it comes to data entry and repeatable actions. You'll be out creating more of an impact while the system saves you time, keeps you organized, and reduces data entry errors.

NOW YOU KNOW

Now that you have a basic understanding of the what, why, and how of operations management, you can begin thinking about how your water utility can integrate best practices and apply them. By using the insights and following the best practices outlined in this paper, you'll position yourself to make better decisions about when and where to begin implementing operations management strategies and technologies into your day-to-day utility operations.

IF YOU'RE INTERESTED IN WATER UTILITIES, YOU'LL LOVE THESE RESOURCES:

Asset Management Basics: A Guide for Communities of all Sizes

cartegraph.com/download/asset-management-basics

READ THE GUIDE >

Preventative Water Utility Maintenance, Simplified by Cartegraph

cartegraph.com/customer-story/joint-water-commission-washington-county-or

READ THEIR STORY >

High-Performance Asset Management: A Guide for Water Utilities

cartegraph.com/download/water-treatment-facility-guide

READ THE GUIDE >

Building High-Performance Government: A How to Guide

cartegraph.com/download/building-high-performance-government

READ THE GUIDE >

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Cartegraph is in the business of building high-performance government. They offer software solutions that help local government agencies manage their physical assets and associated operations. With Cartegraph, users optimize the life of their infrastructure, deploy maintenance resources efficiently, and increase productivity.

To build high-performance governments, Cartegraph uses a comprehensive, three-pronged approach that combines success coaching, expert consulting, and state-of-the-art software solutions for asset, work, and resource management to help agencies capture data, analyze it, and prepare for the future. For more information, visit cartegraph.com.