



Gain Control of Your Data

EMPOWER YOUR TEAMS TO EXTRACT REAL VALUE FROM SMARTER WATER SYSTEMS

xylem
Let's Solve Water

An aerial, high-angle photograph of a city street. A prominent white crosswalk with thick stripes runs diagonally across the dark asphalt. Several people are captured in motion, walking across the crosswalk. The image is used as a background for the text, which is overlaid in white. The overall tone is urban and dynamic.

WATER MANAGEMENT AT A CROSSROADS

For those entrusted with the responsibility of supplying vital water and wastewater services to their communities, it is both the **worst** and the **best of times**.

It is the worst of times because water challenges are intensifying, stressing infrastructure that is already badly in need of renewal. Around the world, the water system's vital signs, including leakage, main breaks, and wastewater overflows, reflect a system in urgent need of investment. Yet we cannot simply spend our way out of these challenges, regardless of how they are financed, without intensifying the burden on struggling ratepayers.

It is worth comparing the water sector's strategic situation to the health care system. Most of us can imagine what a world-class health care system might look like. It would emphasize preventative care, since good hygiene, diet, exercise and health monitoring improve personal health and prevent disease at very low cost. It would utilize powerful and efficient diagnostic processes, from the stethoscope to the CT scan, to screen for signs requiring further attention. It would target medical interventions – affecting only those areas that need it and leaving healthy tissue and systems intact.

By contrast, we all know what doesn't work: neglecting regular health maintenance and responding to health issues only when they erupt, often in the emergency room at moments of crisis. We've seen in too many countries that this model is both unsustainably expensive and does not improve long-term health.

These same truths apply to the water sector. Around the world, water and wastewater infrastructure suffers from long-deferred maintenance. Much of it is underground and out of sight and has never been inspected to assess its overall health. The interventions we do take, such as lift station rehabilitation or pipe replacement, are either reactive and driven by emergencies, or overly severe, ripping out serviceable assets every year at tremendous expense and disruption. This approach to managing water infrastructure is not always in the best interests of the system, or of the users who depend on it for affordable and reliable services.

The good news is that there is an emerging consensus around a better way. Advances in digital technologies are enabling better system hygiene, more efficient monitoring and diagnostics, more targeted investments, and a transition to a "primary care" model for system management. These solutions are poised to make this the best of times for utility managers who want to make a lasting difference in the lives of the communities they serve.

This new approach is called "Decision Intelligence." It leverages the power of data to inform better system-level choices today and make recommendations to improve future operations, maintenance and capital planning. These solutions scan, predict, recommend and prioritize actions and help utilities make dramatic progress on the problems that matter most to the communities they serve: water accessibility, environmental sustainability, resilience, and affordability.

Utilities around the world have been working to improve their operations by making investments in distributed sensor networks, instrumentation and data acquisition systems, ranging from smart pumps, level sensing and flow metering devices, to supervisory control and data acquisition (SCADA) systems and advanced metering infrastructure (AMI). The proliferation of sensors, data streams, and applications is as challenging as it is exciting.

Many utilities complain of a “data deluge” that is making it difficult to realize the benefits of their investments. Utility managers are working to unlock the value of their data by focusing on usability, interoperability and application development – moving from “data swamped” to “data smart.”

Current State

Water and wastewater utility managers have implemented steps to improve the visibility into and operation of their systems by increasing the data they are collecting about their networks. Key characteristics of the current state include:

- Installation of instrumentation and telemetry to measure performance of existing assets and equipment to backhaul the data in real time to the cloud or an on-premise server
- Increasingly intelligent equipment with integrated control
- Implementation of purpose-built networks and systems for specific processes in the utility (e.g. SCADA for operations)
- Field staff, disconnected from existing data sets, are left to make decisions lacking available information, insights, and clear actions for better operational performance.

These initial steps, while instrumental, cannot deliver to the utility the “data smart” label. To pivot from the “data deluge” to “data smart” it is important first to collect good data and then second to leverage that data to drive strong equipment health. By implementing tools and solutions that not only collect the data, but provide clear trends and analysis of the data, you can gain control of your data to both efficiently operate the equipment and manage your staff’s time.



Harnessing the Power of Decision Intelligence with Automation and Control Solutions for Water Utilities

Today's best practices leverage data and analytics capabilities to help utility managers gain control of their assets by utilizing intelligent systems and unlock the valuable data and insights from their assets.

Integration of multiple data sources that stream into a common source that is supported by **water industry experts** to deliver clear, actionable results.

Integrated systems (i.e. Adaptive Mixers and Concertor) implementation of smart technologies that have the built-in sophistication to find the most efficient operating point and autonomously react to challenging situations.

A data security framework ensures that data in transit as well as at rest are encrypted and anonymized where necessary to ensure only systems and personnel authorized to use the data are granted access in a suitable format.

Taken together, these approaches enable a utility to access the full power of their data for short- and long-term decision making.

Benefits of Decision Intelligence with Automation and Control Solutions for Water Utilities

OPERATIONAL BENEFITS

Better decisions can be made faster as users have access to more than just the data, but the trending and analysis to generate clear actions and insights

Efficient use of labor and staffing by implementing smart technologies that leverage autonomous decision-making and utilizing otherwise broken data streams to be integrated into timely, actionable results

FINANCIAL BENEFITS

Elimination of the need for major system overhauls as equipment lifespan is extended by efficiently implementing the appropriate predictive maintenance techniques at the right times when the data is informing you to do so

Reduced operational costs by optimizing real-time performance of the equipment to drive down energy and consumables consumption

Ability to more effectively manage rates by implementing data smart solutions that enhance equipment life and reduce operational costs, it inevitably reduces the burden placed on utilities to raise rates for new infrastructure and assets

COMMUNITY BENEFITS

Improved regulatory compliance with performance driven solutions and integration that always seeks to deliver compliance while simultaneously seeking opportunities to do so by reducing cost

Increased trust from the community towards the utility that compliance and public safety are highly regarded, but that the infrastructure is using intelligent data to be efficiently managed

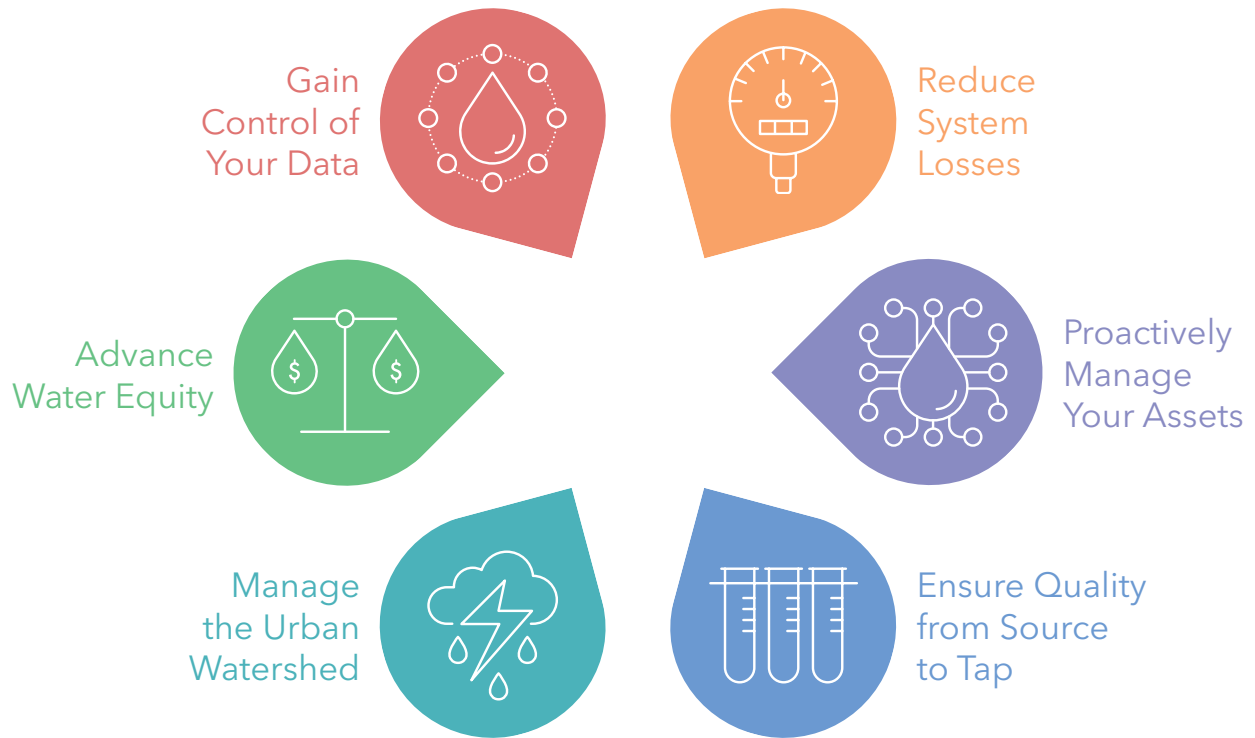
Driving Impact with Automation and Control Solutions for Water Utilities

■ The city of Muncie, IN was limited to manual operation and mixing-limited conditions of their aeration basins which led to over aeration and high energy consumption. As it was difficult to maintain consistent dissolved oxygen (DO) levels, it led to the operations staff running around all day adjusting blower speeds and header valves. Xylem's YSI IQSensorNet instrumentation was employed in the aeration basins to effectively collect the data needed and Xylem's Sanitaire OSCAR solution was employed for real-time control of the process from these new data streams. With these new solutions, the City of Muncie, IN has saved 140,000 kW-hr of energy per year and their overall costs savings is \$5,000 per month.

■ The city of Albion, MI was facing the challenge of continuing to maintain their wastewater treatment equipment while seeing a vast community expansion. One of their challenges was to better control their mixing (which was frequently too high) to implement stronger DO control. Xylem's Flygt 4220 Adaptive Mixer was installed to provide better mixing control. As the adaptive mixer is an intelligent solution it is capable of providing its own process control. The 4220 Mixer reduced the mixing power consumption by >95% and allows the city of Albion, MI to match their process and application needs on a day-to-day basis.

■ Onondaga Co, NY implemented an upgrade of their West Side sewage pump station for the first time in 30 years in 2018. To safely and successfully complete the upgrade, a temporary sewage bypass system was implemented with Xylem's Flygt and Godwin equipment. As this was a very important sewage system that fed the wastewater treatment plant, constant data collection and oversight was required to effectively operate the sewage bypass equipment 24/7. Xylem's Godwin VFDs, Godwin Industrial Control Panels, and Godwin's Advanced Remote Monitoring and Control solutions were implemented. With this equipment in place the sewage bypass upgrade was completed in 6 months without any spills and saved the county \$57,000 in operational costs.

■ The Lowndes County Utility Department had an existing SCADA network that was shared with multiple departments in the County. Unfortunately, this SCADA network lacked the clarity or the remote accessibility for their operations team to understand the real-time performance leading to frequent call-outs and an over-stretched staff. By implementing Xylem's Flygt Cloud SCADA and Flygt MultiSmart Intelligent Pump Station Manager (IPSM) for all their water and wastewater needs, Lowndes County has reduced their labor costs by \$15,000 per year and has reduced their capital expenditures by nearly \$40,000 per incident by having a better indication of the health of their equipment.



Learn more about how your utility can capture the opportunity of a lifetime to serve your community even more effectively by [Harnessing the Power of Decision Intelligence](#)