

Rise Above the Data Deluge

Boosting Utility Transformation
with Data Integration



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Introduction

As water challenges intensify, technology is helping utilities to rapidly transform systems. Digital solutions are empowering utility operators to address their greatest challenges: delivering water, energy, and cost savings; building operational and financial resilience; improving customer service; meeting rigorous regulatory requirements; and providing the tools needed to address the challenges of an aging workforce.

As the array of data sources grows, however, data overload can hamper progress. The key to maximizing every digital solution is integration. Connecting data in a single, interoperable, vendor-agnostic platform, utilities can get a 360-degree view of their operations and unlock the insight needed to tackle challenges in an affordable, sustainable way.

This paper explores the potential of data integration, drawing on the experience of water utilities already reaping the benefits.

Let's see what's possible.

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Drowning in numbers

The Challenge of Untamed Data



Disconnected Sources

Utility networks are typically composed of multiple systems from different suppliers. Rarely designed to work together, these disconnected sources make it difficult for utilities to get a full view of operations and realize the potential of the entire data set.



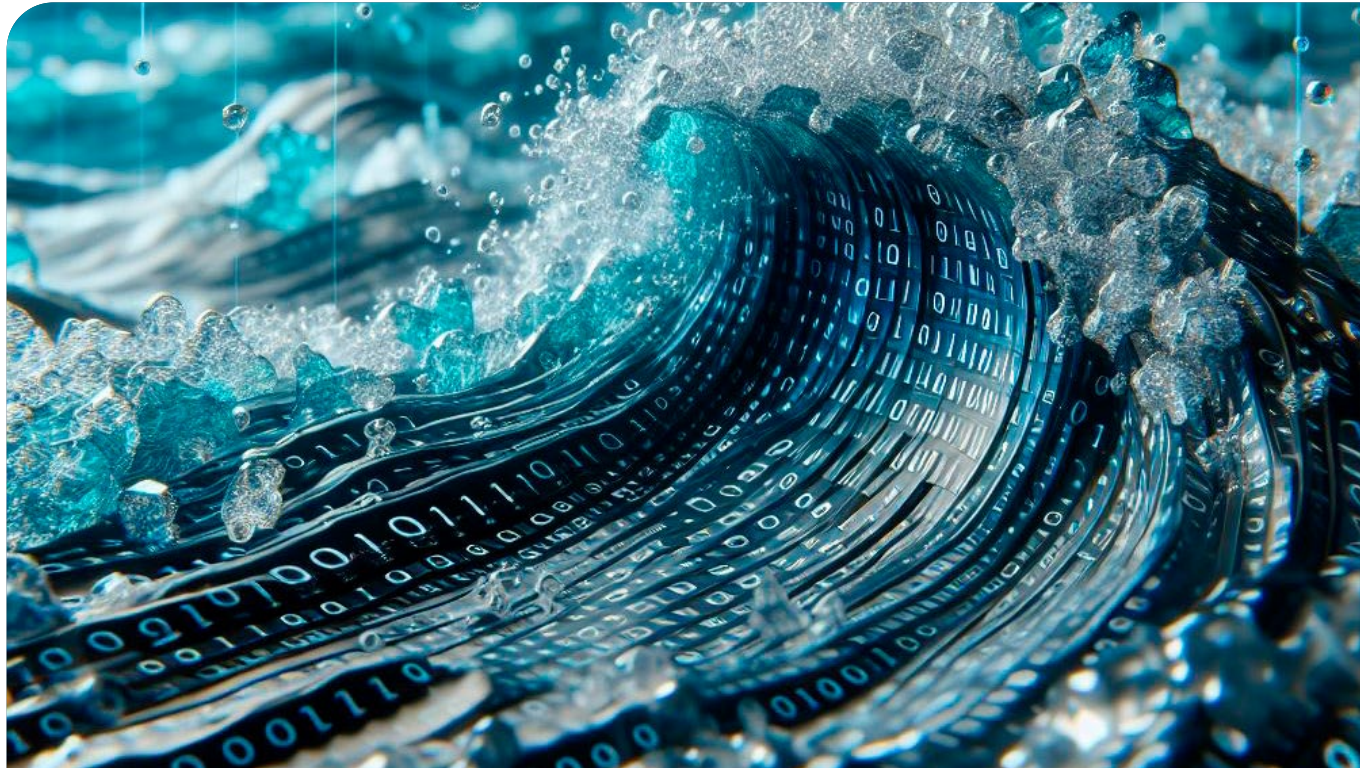
People Problems

Complex organizational structures can lead to siloed approaches to using data within utilities, limiting the potential of digital solutions. With 30 to 50% of the sector's employees eligible for retirement in the next five to 10 years ([America's Water Sector Workforce Initiative 2020, EPA](#)), integrating data is essential to codify institutional knowledge and upskill new staff.



Information Overload

Water systems can generate hundreds of thousands of data points in a day. Without careful management, the volume of data can overwhelm and hamper operators as they identify what's important.



In the pages that follow, we explore how utilities around the world have streamlined their data to maximize digital solutions and transform operational resilience.

Empowering operators in England

The Challenge

Yorkshire Water Services, a leading water utility in England that serves nearly 5.5 million people, has a culture of embracing innovation to deliver better customer service and manage costs. In 2019, Yorkshire Water Services met a challenge set by the UK's Water Services Regulation Authority (Ofwat) to embrace innovation to transform the way it serves customers and protects the environment.

The utility began by collaborating with 15 companies, including Xylem and Idrica, to incorporate the latest digital technology and revolutionize how it manages leaks and supply interruptions. In 2020, Yorkshire Water Services chose Sheffield as the site for the UK's first smart water city. With its harsh winters, the 'Steel City' is a perfect testing ground with plenty of freeze-thaw events that regularly result in leakage and maintenance cost challenges for the utility.

The Solution

The answer lay in a single, integrated, vendor-agnostic software and analytics platform that allowed Yorkshire Water Services to securely integrate and standardize its data, regardless of its source. Operators monitor and manage the system using critical performance indicators, alarms, and reporting capabilities. This helps to minimize "alarm overload" and integrate work orders to monitor field operations more effectively, giving operators more time to focus on priority issues and manage the full cycle of a problem, from detection to work order assignment.

The results were significant. Yorkshire Water Services has seen a 57% reduction in visible leaks with more accurate water balance calculations to help improve non-revenue water management, increase process efficiency, and accurately determine the impact of various leak detection technologies. The utility has also reduced leakage in high-priority district-metered areas by 32% while requiring almost 30% fewer distribution main repairs annually.

With 6,000 sensors, including smart meters and flow, acoustic, and transient detection devices, Yorkshire Water Services wasn't lacking in data. It needed a way to manage that data and help managers and operators transform it into actionable intelligence.

By effectively integrating data, Yorkshire Water Services has empowered its operators with a holistic, network-wide view, enabling them to prioritize and proactively address issues. It's a powerful example of the cascade of benefits kickstarted by data integration.



Uncovering efficiencies in the Midwest

The Challenge

How do you solve a problem you didn't even know you had? Consider the common issue of a malfunctioning piece of equipment. A utility may not know there is an issue until it is caught in a maintenance check or creates a problem large enough that it can't go unnoticed.

This is a challenge that arose for a utility in the Midwest U.S. When it began modernizing its approach to data management, operators noticed some unusual issues. Equipment was activated at points of the day without a clear trigger, pushing up energy bills and emissions while causing unnecessary wear to equipment.

The Solution

Integrating data in a single platform can help utilities find hidden problems and meet regulatory demands with transparent, verifiable information.

With a built-in early warning system, operators can quickly identify issues and take steps to fix the problem. A digital record of the incident and how it was fixed allows the issue to be quickly explained to regulators and other stakeholders.

For the utility in the Midwest U.S., marrying sensor data from different systems helped solve the problem. Operators at the utility backtracked through the system and diagnosed the two sites causing the issue.

The benefits of integrated data go beyond the day-to-day. By overlaying historical data against current data, all utilities, regardless of size or scale, can better understand where strategic upgrades will have the most impact. More comprehensive information about the condition of equipment or infrastructure allows utilities to make more informed capital planning decisions instead of replacing assets based on age.



Unifying teams through tech in Nashville

The Challenge

Operators sometimes resist new technology. Some fear it will change or replace their jobs, or that new systems will add complexity. The key to adoption is giving people confidence that technology will make life easier or more interesting.

Using technology to help solve everyday issues frees up time for staff to focus on solving challenging problems that make a difference to communities. When staff feel work is having an impact, they tend to stay longer, while much-needed new talent will gravitate towards innovative, rewarding work.

Take the staff at [Nashville Metro Water Services](#) in Tennessee, U.S., a utility serving more than 191,000 customers. Until recently, technicians spent much of their day venturing into the surrounding counties and – quite literally – getting their hands dirty. Poison ivy and bug bites were part of the job, as they walked through fields and navigated hazardous road conditions to manually read meters that were often covered with overgrown plants, dirt, and debris – a costly process prone to errors.



The Solution

Nashville Metro Water Services installed water meters to gather the data which is reported to operators in real-time using a single, integrated software and data analytics platform. This led to improved working conditions for technicians, time on the road was reduced, and the cost per meter read was cut by 95 cents, saving \$181,000 each month.

The Nashville Metro Water Services experience is just one example of how streamlining data management can make water operators' jobs easier, allowing them to spend more time helping customers. It can also inspire employees to leverage digital solutions in new ways – as operators see the value of digital, it builds their confidence and fosters a culture of integration and innovation.

Transformation through insight

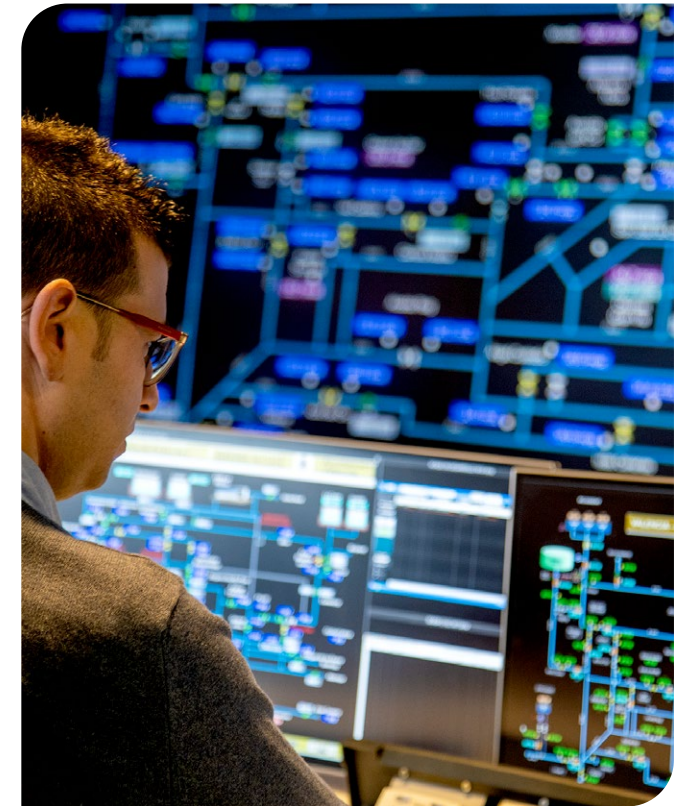
A real-time view of a network can be transformative. Teams can make faster, more informed decisions as awareness and control increase. Operators can fully reap the benefits of investments in digital solutions.



The origin of the GoAigua technology, now the base of Xylem Vue, is a case in point. The platform was developed in response to utility challenges by Idrica, a technology spin-off of water management company Global Omnium which supplies water to more than 5 million people. This platform, which is scalable and agnostic, brings together the systems and data from a smart water network into a single, easy-to-use dashboard that gives a holistic view of operations. [Global Omnium](#) implemented the new technology in the city of Valencia, Spain, with compelling results:

1. A digital twin increased the utility's operational efficiency by more than 15% over the last 10 years
2. Average water losses reduced by 18% due to real-time water balances, integrating remote reading and flow systems, and AI-driven leak detection algorithms
3. A novel hydraulic optimization approach including advanced pressure monitoring have boosted system efficiency by 25% on average

This transformation didn't happen overnight. It was an iterative, collaborative process to refine the solution over time. However, it's an inspiring example of the results that utilities can achieve as they chart their path to harnessing the power of data.



A step-by-step plan to unlock the power of integrated data



1. Audit, assess, prioritize

Audit current data use to identify interdependencies, silos, and gaps, and determine the potential of the entire data set. Map where information can help solve immediate, medium-term, and long-term issues.



2. Open access to everyone

Give access to staff across the utility and enable users to create new data identifications and dashboards.



3. Uncover inefficiencies with early warnings

Use automated alerts to notify operators of system issues and help them intervene early to save time and costs.



4. Inform capital planning

Use accurate information about the condition of assets and operations to target strategic upgrades and avoid capital investment by making the most of existing systems.



5. Iterate

With confidence in the underlying data, take steps towards using data in a digital twin or deploying AI-supported decision-making systems.

When managed effectively, data can be a powerful tool to help utilities make smart decisions and address critical water challenges.

To see what's possible for your utility, visit [Xylem Vue](#).

Xylem l'zīlāmī

- 1) the tissue in plants that brings water and nutrients upward from the roots.
- 2) a leading global water solutions company.

Xylem is the connective tissue and system in plants which cleanses and transports water from the root to where it is needed most to sustain life.

And this is the essence of Xylem as a company. We are committed to driving sustainable impact by ensuring our connected technologies and solutions support our customers and the communities they serve, to tackle the water challenges that matter most to them.

For more information on how Xylem can help you, visit [xylem.com](https://www.xylem.com).

xylem  vue

Xylem Vue is the result of the partnership between Xylem, a global leader in water technology and Idrica, an international pioneer in water data management, analytics and smart-water solutions. Through this partnership, Xylem and Idrica bring together their technology, innovation, and expertise to solve the world's most critical drinking water, wastewater and other water-related challenges.

Our single, integrated software and analytics platform – built by utilities, for utilities – enables utilities to take digital transformation to the next level, maximize investments, identify and solve problems more quickly, operate more efficiently and deliver water more effectively and affordably to their communities.

[xylem.com](https://www.xylem.com)

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