

Digital transformation in the water industry

How to take it next level with a digital twin

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The digital landscape of the water segment



What's shaping water and wastewater operations

Both external and internal pressures are changing the face of the water industry today, leaving companies in the sector feeling caught in between.

On one side, quality standards and environmentally driven CO₂ emission regulations are getting more stringent. On the other, water utilities are challenged with increasing resource efficiency and the resilience of infrastructure impacted by climate hazards and aging while reducing the environmental footprint and improving circularity.

Tackling all these issues at the same time? It's possible, with the actionable operational insights and advanced control that digital technologies can provide.



Digitizing process control is the start

Many water utilities have taken the first step in digitization. Indeed, most plant and network processes nowadays are automated, running 24/7 with minimum on-site assistance from technicians.

This is possible thanks to digital technologies working on two different levels: sensors attached to physical components such as valves, pumps, pipes, etc., plus supervisory control software (SCADA) for monitoring sensor inputs. This gives technicians a comprehensive process view, allowing them to tackle issues more efficiently.

But despite the wide-ranging adoption of digitized process control in water facilities, only a limited number of companies are taking full advantage of the information at their disposal.



Unifying operations at the enterprise level

By implementing analytics that bring together all domains of company activity, water utilities can gain a consolidated, contextualized view of their operations. This empowers the workforce for greater efficiency and enables better-informed decisions.

So what's preventing companies from taking this step?

The implementation process may seem complex and investment-heavy due to the number of necessary system integrations. But it doesn't have to happen overnight, and you don't need to follow an all-or-nothing approach.

This is where a digital twin comes in extremely handy. Using a digital twin facilitates a scalable, flexible strategy that helps water utilities reap the full benefits of digital transformation and future-proof their operations without piling on too much strain.



The value of a digital twin



Understanding digital twins

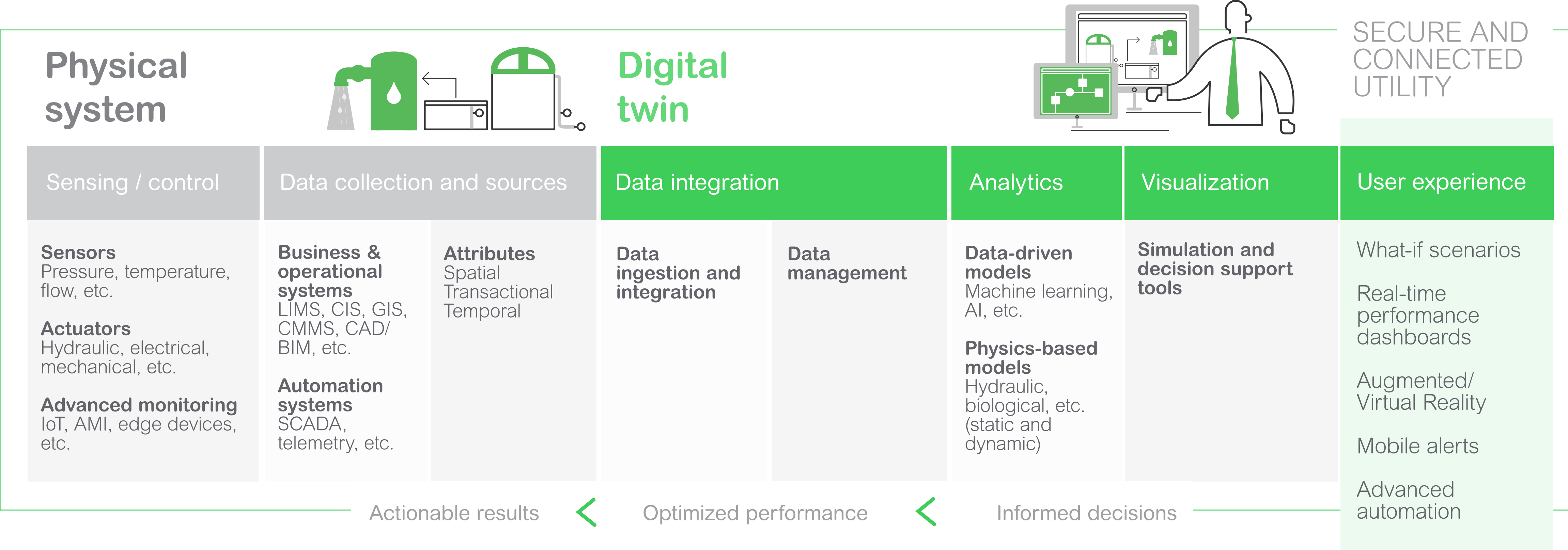
A digital twin is a dynamic digital representation of real-world entities and their behaviors. It's modeled using static and dynamic data which enable insights and interactions to drive actionable and improved outcomes.*



*Source: SWAN. Digital Twin Readiness Guide. UK May 2022



Where a digital twin fits



*Source: SWAN. Digital Twin Readiness Guide. UK May 2022



Establishing digital continuity

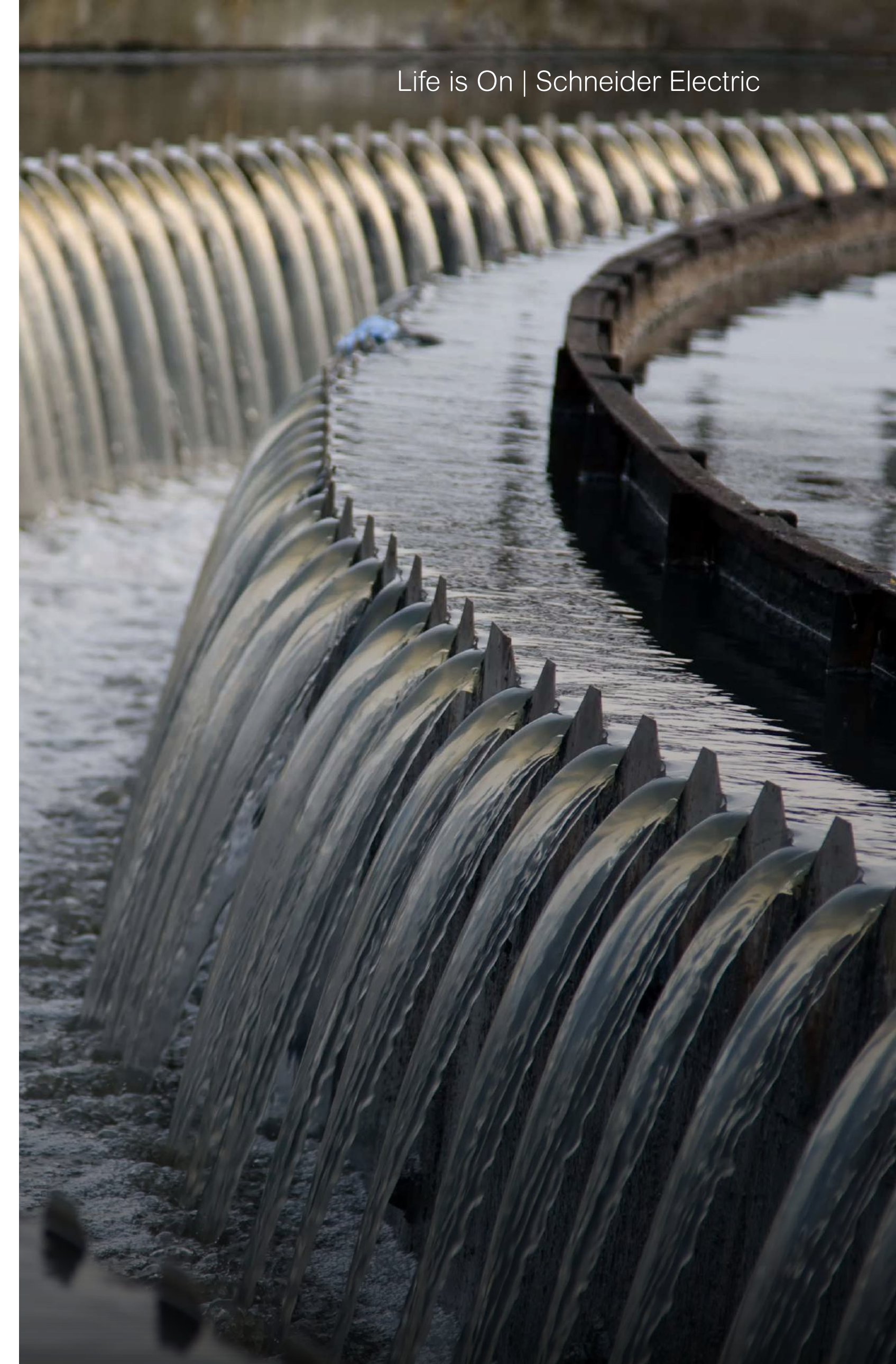
Digital twin technology provides a framework for continuous synchronization between a physical system and its virtual representation. By integrating data from different sources, it delivers:

- Digital infrastructure and asset-based engineering for end-to-end management
- A unique platform for the design and build phases with intelligent object models for virtualization and simulation, and integrated automation engineering
- Extended models for the operation and maintenance phases to prolong asset life and make infrastructure more reliable and sustainable

- Sustainability-supporting features integrated into the BIM or process model

While implementing a digital twin, it's key to integrate:

- Cybersecurity services for the protection of business operations
- Workforce enablement functions for safety and efficiency
- A secure virtual environment for workforce training and decision-making



Turning data into concrete benefits

With a single-pane-of-glass software embedding a digital twin, everyone from technicians to management has access to the contextualized, actionable information they need.

This increased visibility at all company levels enables more agile management of operations and KPIs, creating value from the enterprise level to geographically dispersed sites.

The benefits of a fully executed digital transformation

Up to **50%**
CapEx investment
costs optimization

Up to **80%**
OpEx energy
cost savings

Up to **50%** CO₂
footprint optimization

Up to **20%**
time-to-market optimization

Up to **15%**
water loss reduction

ROI in up to **0.75** year

Data source: Schneider Electric, Global Digital Transformation Benefits Report, 2021



Putting a digital twin to work for you



Prepare to maximize your ROI

A digital twin solution is adapted to each unique circumstance, including software environment, infrastructure, and budget requirements. For a successful implementation and best ROI, follow these best practices:



Engage key company stakeholders to get a holistic view of your organization’s aspirations and success criteria.



Review existing systems, processes, and standards to keep the best of each and digitize your company’s methodologies and processes.



Align the project’s strategy and roadmap with the company’s ambitions (sustainability, resiliency, etc.)



Upskill employees and build engineering capabilities to get the most of your technologies.



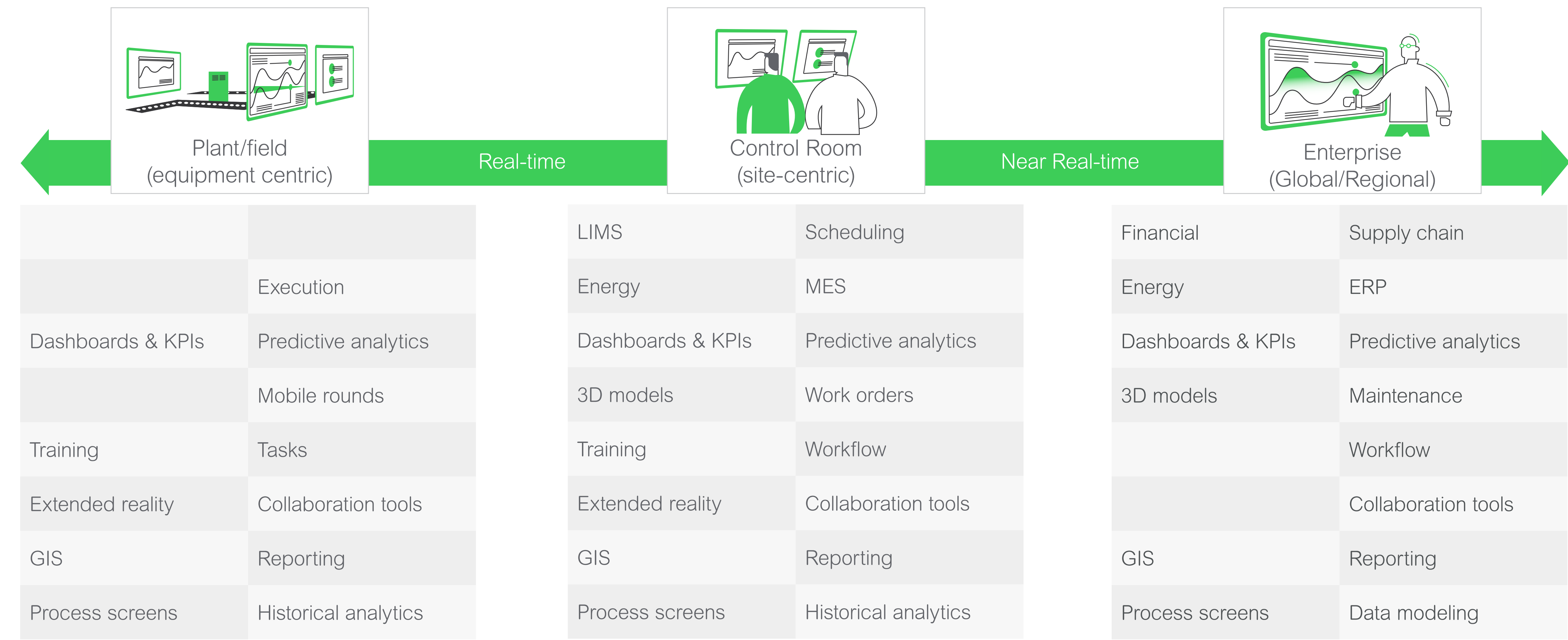
Get support from an experienced partner

Combining expertise in automation and energy management, Schneider Electric is uniquely positioned to support water companies in digital transformation.

With our comprehensive EcoStruxure™ for Water & Wastewater portfolio, together with industry-leading AVEVA software, we can help you plan and execute your digital transformation effectively and successfully.



Integrate your operations from field to enterprise



Digitizing the water supply for greater efficiency

Kunming CGE Water Supply services the nearly four million residents of Kunming city in China.

To meet the growing urban population's demand for high-quality drinking water, the water company decided to implement EcoStruxure for Water & Wastewater solutions to reduce water leakage and energy waste, and improve operational and maintenance efficiencies.

The results included:

- A safer, more reliable, sustainable, and efficient water distribution process
- Reduced energy and overall operating costs
- Real-time control and more efficient maintenance

Discover the full story [here](#).



Tackling water loss with centralized control

Padania Acque provides integrated water services to over 150,000 customers from 115 municipalities in the Province of Cremona, Italy.

The company implemented EcoStruxure for Water & Wastewater solutions to gain better control over 1,000 aqueducts and sewage and purification plants, reduce water loss, and increase the efficiency of its operations.

The results expected from the project include:

- Up to 10% reduction of water loss
- At least a 5% reduction in energy consumption
- 20% improvement in operational efficiency

Discover the full story [here](#).



Unifying operations management

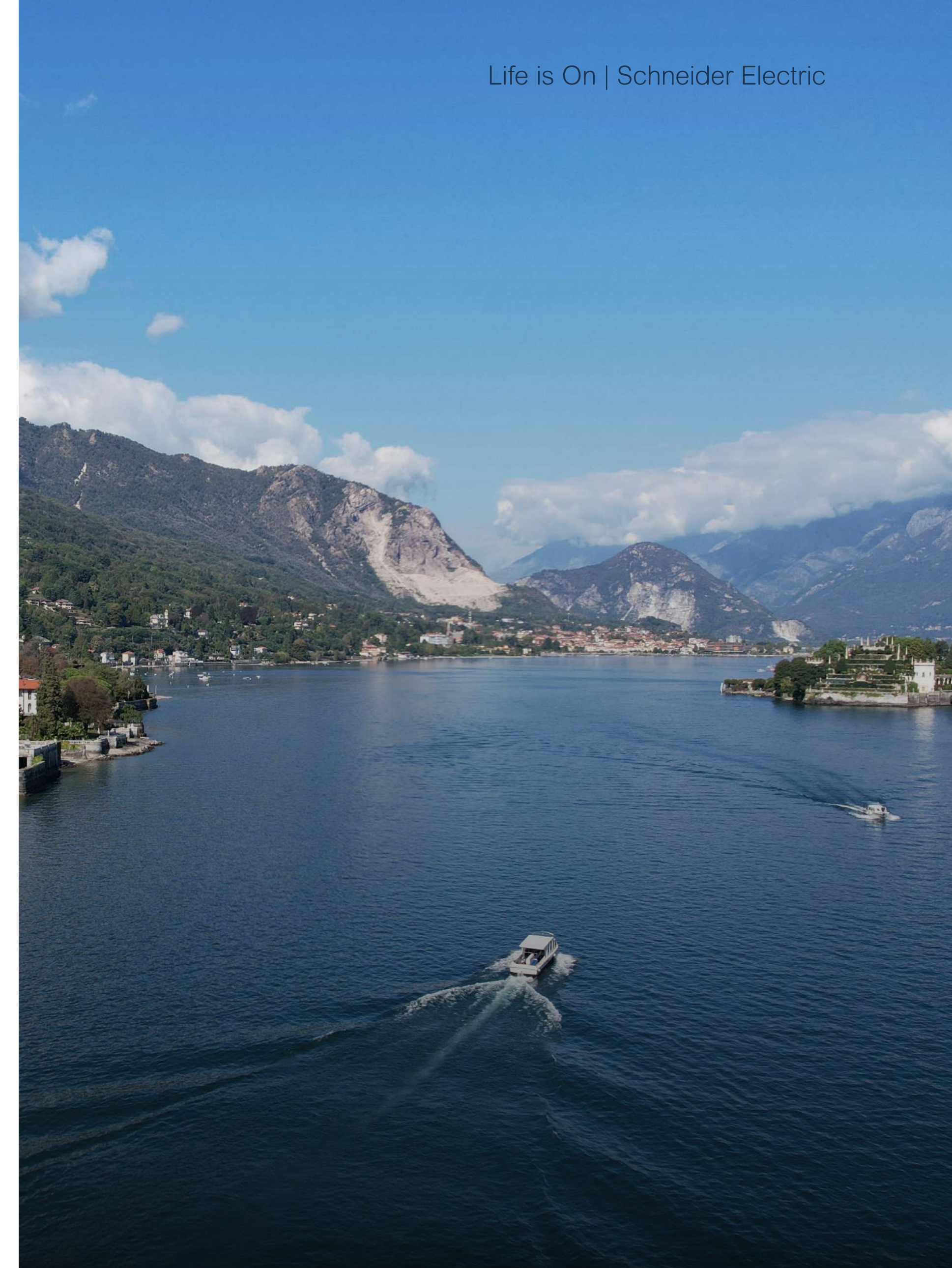
Acqua Novara is a water services provider for domestic, agricultural, and industrial use from Northern Italy. The company serves 450,000 inhabitants of 139 municipalities and supplies over 3.7 B m³ of water per year.

By implementing EcoStruxure for Water & Wastewater solutions, Acqua Novara unified its complex organizational structure, standardized processes and procedures, and implemented a centralized management system.

The expected project outcomes include:

- A 10% reduction in water loss, an equivalent to 6 M m³/year of water saved
- A 15% reduction in energy consumption
- Improved operational efficiency

Discover the full story [here](#).



Maximize the benefits of digital transformation

By advancing from asset-focused data monitoring to enterprise-wide analytics with a digital twin, water companies gain a lot in terms of efficiency and informed decision-making.

But solid operational insights are just one enabler of a successful digital transformation. Workforce empowerment, data management with process intelligence, and cybersecurity across the entire digital ecosystem are some of the others.

In the upcoming e-guides, we will discuss the role of these enablers in water and wastewater operations.

If you'd like to explore the digital transformation topic further, download the [“Taking Control of Industrial Digital Transformation”](#) report by Omdia.



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Explore digital solutions for the water
and wastewater sector

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