



# Digital solutions for water asset resilience

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Connect data from planning to operations to improve asset life expectancy, performance, and resilience.

 **AUTODESK**

# Introduction

Water and wastewater professionals are at the front lines of society's response to climate-related events and the increasing demands on our infrastructure.

Drought threatens adequate supply, while heavy storms overwhelm systems designed for "normal" flows—sometimes in the same location, in the same year. Factor in aging infrastructure and rampant urban and suburban growth, and the future for utilities is full of challenges and obstacles.

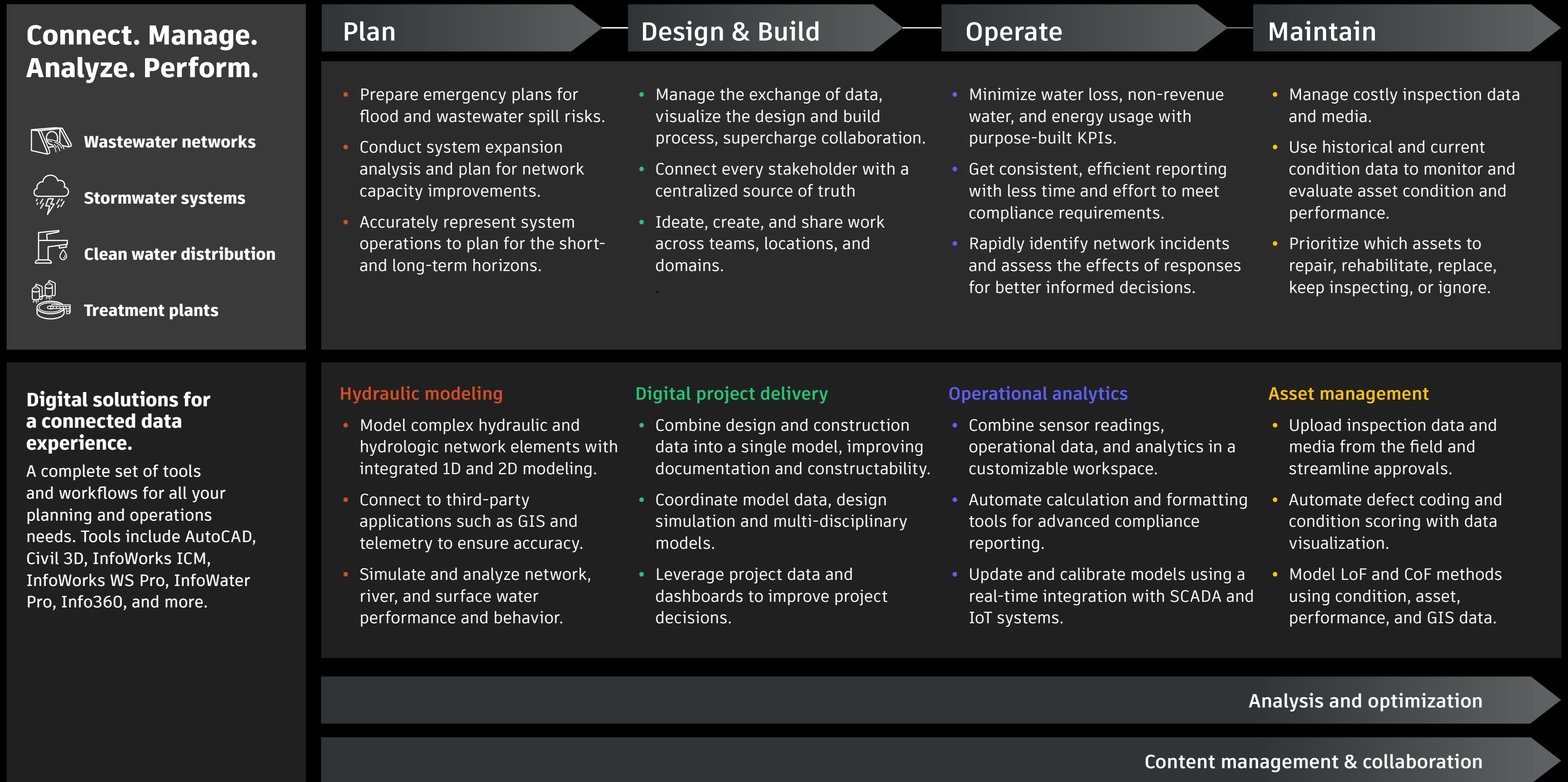
These services are so essential—to commerce, to daily living, and to public health—that utilities must minimize interruptions in service and ensure adequate capacity now and in the future.

Water utilities, local councils, catchment management authorities, and consultants trust Autodesk software to help them address the entire water lifecycle—from design and planning to operations and maintenance of water, sewer, stormwater, and drainage systems, as well as treatment plants. Our integrated tools are used to build digital twins of water systems to equip utilities with the data needed to understand existing conditions and statuses in real time, while planning for the future of their community and the environment.

↔ Invest in your digital journey today  
↔ for improved water asset performance.



# Transform your digital maturity



# An accurate, holistic model of your network

## Quickly build trusted models that inspire confident decision making.

Stormwater and wastewater professionals are key drivers in creating actionable plans for reducing the impact of flood risk, spills, pollution, and asset failures.

Better serve the needs of your community by forecasting how your system will respond to varying conditions. Model complex wastewater and stormwater network elements to inform decisions around capacity fluctuations, system expansions, and emergency scenarios.

“ Now the model is able to keep up with an increase in groundwater. We’re able to focus the inflow and infiltration reduction and remediation program to better prevent sanitary sewer overflows. ”

**Javier Garcia, Jacobs**



## Leveraging hydraulic data for better capital decisions

Dekalb County takes their approach to rainfall management seriously, and they attribute their success to a unique hydraulic modeling approach which measures groundwater infiltration. For this project, Dekalb County partnered with Jacobs to calibrate the wet weather flows in their collection system model.

Using a powerful hydraulic model, Dekalb and Jacobs were able to clearly see where the worst infiltration problems were located to prioritize capital improvements.

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# Take informed action on your clean water systems

## Represent real water systems, digitally.

Disruptions to clean water services are unfortunately inevitable for all water systems. However, the key to minimizing the impact of water main breaks, essential maintenance, and other capital improvements, is proactive—not reactive—response planning. But even proactive emergency responses can falter if steps are mapped out on pages in a binder tucked away on some bookshelf.

Digital hydraulic modeling solutions for water distribution networks allow utilities to plan for the short- and long-term horizons, simulate and analyze potential outages to determine out-of-service customers, and accurately represent system operations in geospatial context.

“With a model-based emergency response plan, we can capture information that could be critical to a future event... dashboards create an interactive experience that the city can build on.”

Susan Knepper, OHM Advisors



Livonia, Michigan

## Reducing customer service disruptions with digital plans

After the City of Livonia, Michigan, experienced a master meter failure that caused several water main breaks, closed a major highway, and triggered a city-wide boil-water advisory—they decided to create a comprehensive plan for any future such events.

The city turned to OHM Advisors to create a modern digital plan using GIS-based hydraulic models that could be shared and updated with water utility engineers and operators to reduce customer impact during emergency situations.

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## DIGITAL PROJECT DELIVERY

# Connect, visualize, and act in a common data environment

## Own your path to water infrastructure resiliency.

Fostering resilient and sustainable water infrastructure starts by taking charge with purposeful ownership.

Embracing digital project delivery introduces more intelligent coordination, traceable and transparent project evolution, and enhanced stakeholder engagement in a cloud-based common data environment across the entire asset lifecycle.

“Using cloud-based collaboration saved the project time and money. That, of course, carries right over to the city.”

**Kurt Smith, Arcadis**



## Collaborative technology supports resilient water systems

When the aging water treatment plant serving Toledo, Ohio was overwhelmed by toxic green algae in the summer of 2014, citizens were left without drinkable water for days. In the wake of this emergency, the city turned to global design and engineering consultancy Arcadis to renovate and expand the 80-year-old facility.

Using advanced BIM technology and cloud collaboration, Arcadis designed an upgrade to improve the plant's resilience and ensure safe water for the community.

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# Turn data to decisions with operational digital twins

## A swell of data in the water industry.

It's easy to say that data is critical—but transforming data from stored bits and bytes into a vehicle for change and efficiency is the challenging part.

The water industry is a perfect example of this challenge. Water utilities, local councils, and supporting consulting companies have entered an era where vast amounts of data are produced from sensors and manual inputs that monitor water networks and plants. Pairing data with proactive system management and maintenance can uncover solutions for the complex challenges confronting the industry with a degree of execution and response previously beyond reach.

“ Optimization of your water network is a common challenge. When you optimize your pumps, you benefit from peak efficiency. And by achieving peak efficiency, you also achieve 100% of your asset life. ”

**James Curtis Stantec**



## Sharing data and generating insights to improve resilience

With the help of Stantec, Wellington Water developed a preventative asset maintenance program using cloud-based analytics tools that connect SCADA data to better understand their pump infrastructure's operational performance.

The result: Wellington Water estimated they would experience 20% savings in electricity costs—plus lower maintenance costs and fewer field tests needed to assess pump condition.

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## ASSET MANAGEMENT

# Address the right assets at the right time

## Turn inspection data into risk-based plans.

The nature and complexity of water systems make widescale digitization extremely challenging. Water infrastructure lives underground, in a natural environment and changes to their physical properties over time are often unseen until they fail and are replaced.

By implementing a strategic asset management program, utilities can reduce risk of asset failure and save capital improvement costs by proactively planning rehab and replacement projects. Turn your investment in inspection data into valuable information that helps you prioritize intervention decisions, minimize future system failures, and reduce O&M and capital costs.

“ We took some steps to help improve our inspection process and how we can be more efficient with our funding, but then also help tell our story of what our need is for future forecasting. ”

**Caroline Barlow, PE,  
Seattle Public Utilities**



Seattle, Washington

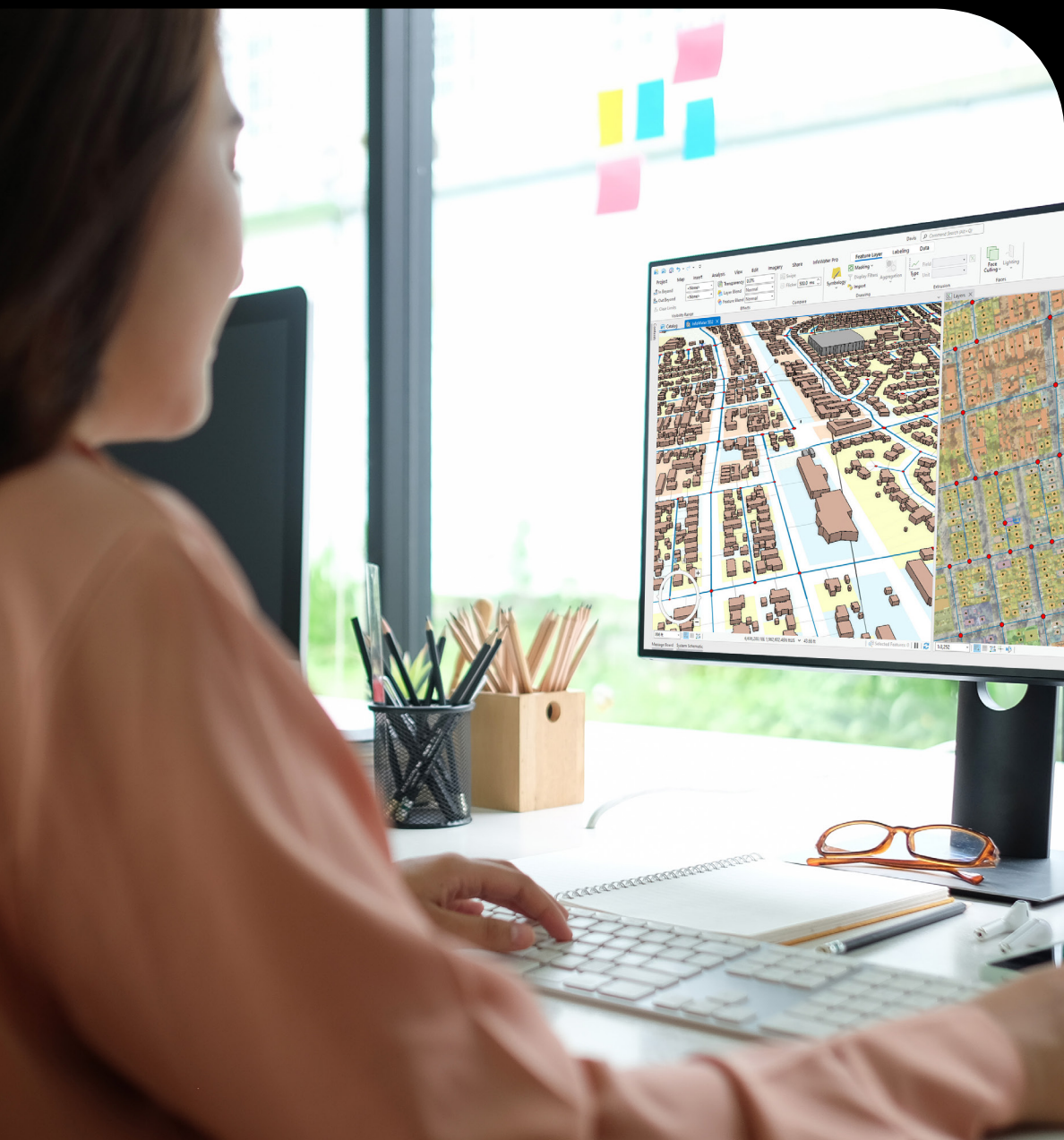
## Deliberate risk assessment

Seattle Public Utilities is a forward thinking utility, with a desire to be more proactive in their pipe inspections, rather than reactive with emergency response. Through a concerted effort, SPU developed a comprehensive asset management program for pipe inspection, condition evaluation, risk assessment, capital investment, and implementation planning.

With this program, SPU was able to understand the risks in the system and where they needed to concentrate their budget to avoid future pipe failures.

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# Ready to **start** your digital transformation journey?

Click through below to learn more about how Autodesk's digital solutions can deliver value throughout the water asset lifecycle, and to book a consultation with an expert.

Your digital transformation starts here



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