



MAGNE STOKKA, BUSINESS DEVELOPMENT MANAGER

What does Xylem mean?

Xylem ['zīləm]

Xylem is a tissue in plants that ensures water transport from the roots upwards. So the name suits us very well. We also transport, treat and measure water. We do it with...



Respect



Responsibility



Integrity



Creativity



Global leader in water technology



2020 sales \$ 5,52B



Employees ~ 17.000



Countries ~ 150



Continents 7

RESPECT

RESPONSIBILITY

INTEGRITY

CREATIVITY

xylem
Let's Solve Water

Xylem Norway



70 MEUR Revenue 2021



160 Employees



9 Locations

- Sales engineers
- Project engineers
- M&C Automation engineers
- Application engineers
- Project management
- Service technicians
- Local service work shops

We solve the greatest water challenges within:



Public Utilities:

Pumping stations for water and waste water, WWTP and WTP

Industry:

Fish and Aqua culture, general industry and power, food & beverage, oil & gas.

Building Solutions:

Pumps for water & waste water, smaller pumping stations, water supply and circulation.

Xylem, a global company

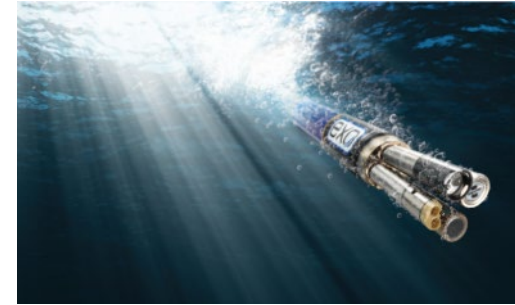
#1 Transport



#1 Treatment



#2 Measuring & Control



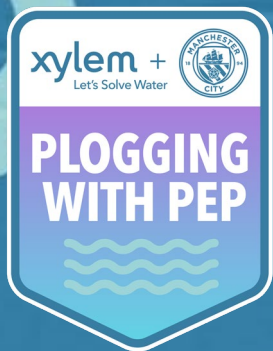
Vi har samlet inn penger og donert det til bygging av vanntårn på Phillipinene og i Gambodja



Vi samlet inn for Ukraina



- Raised over \$83,000 through our matched fundraising campaign
- Volunteering Match Results: \$88,000 has been raised for Ukraine relief efforts through the Make Your Mark 30 Day Challenge - \$15 for each employee or stakeholder who volunteered
- Volunteered 2,300+ hours for Ukrainian relief efforts
 - Fundraising, donating supplies, volunteering to provide housing, education & more for refugees



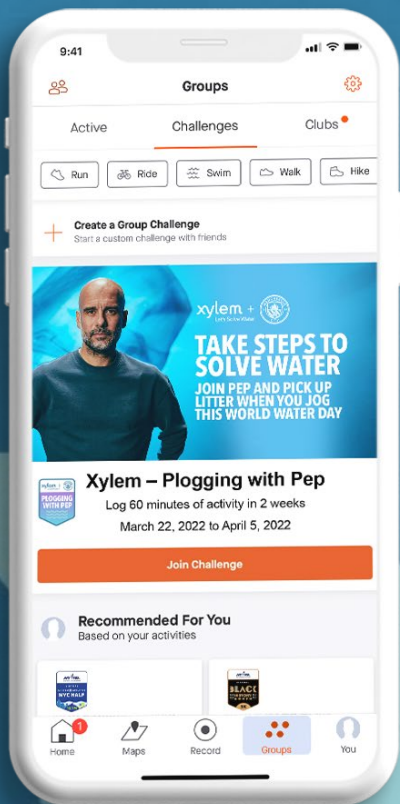
TAKE STEPS TO SOLVE WATER STRAVA CHALLENGES

XYLEM - WATER HEROES STRAVA CLUBS



CHALLENGE 1 | PLOGGING WITH PEP WORLD WATER DAY MARCH 22

CHALLENGE 2 | WALK FOR WATER WORLD EARTH DAY APRIL 22



LOG 60 MINUTES OF PLOGGING BETWEEN MARCH 22 - APRIL 5 IN STRAVA

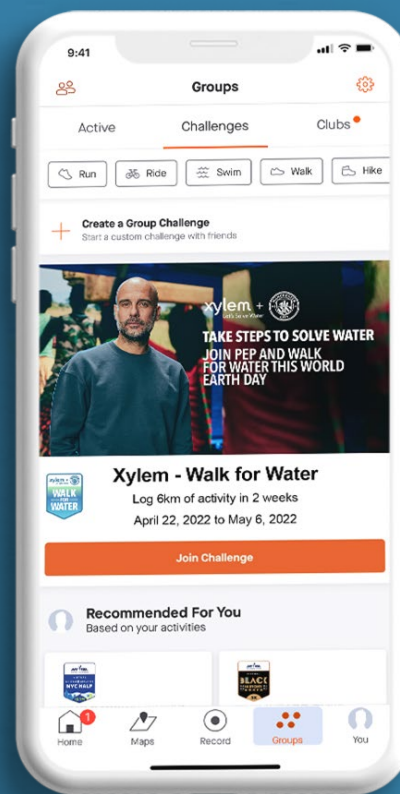
RESULTS

EXTERNAL

- 98K SIGNUPS ON STRAVA
- 92K CHALLENGE COMPLETIONS

INTERNAL MYWATERMARK

- 800+ PARTICIPANTS
- 2,500 HOURS



COMPLETE A 6KM WALK/RUN BETWEEN APRIL 22 - 6 MAY IN STRAVA

RESULTS

EXTERNAL

- 180K SIGNUPS ON STRAVA
- 14K CHALLENGE COMPLETIONS

INTERNAL MYWATERMARK

- 425+ PARTICIPANTS
- 800+ HOURS

REMEMBER TO LOG TIME!



WATER CHALLENGES ARE

CLOSER

THAN YOU

THINK



xylem
Let's Solve Water





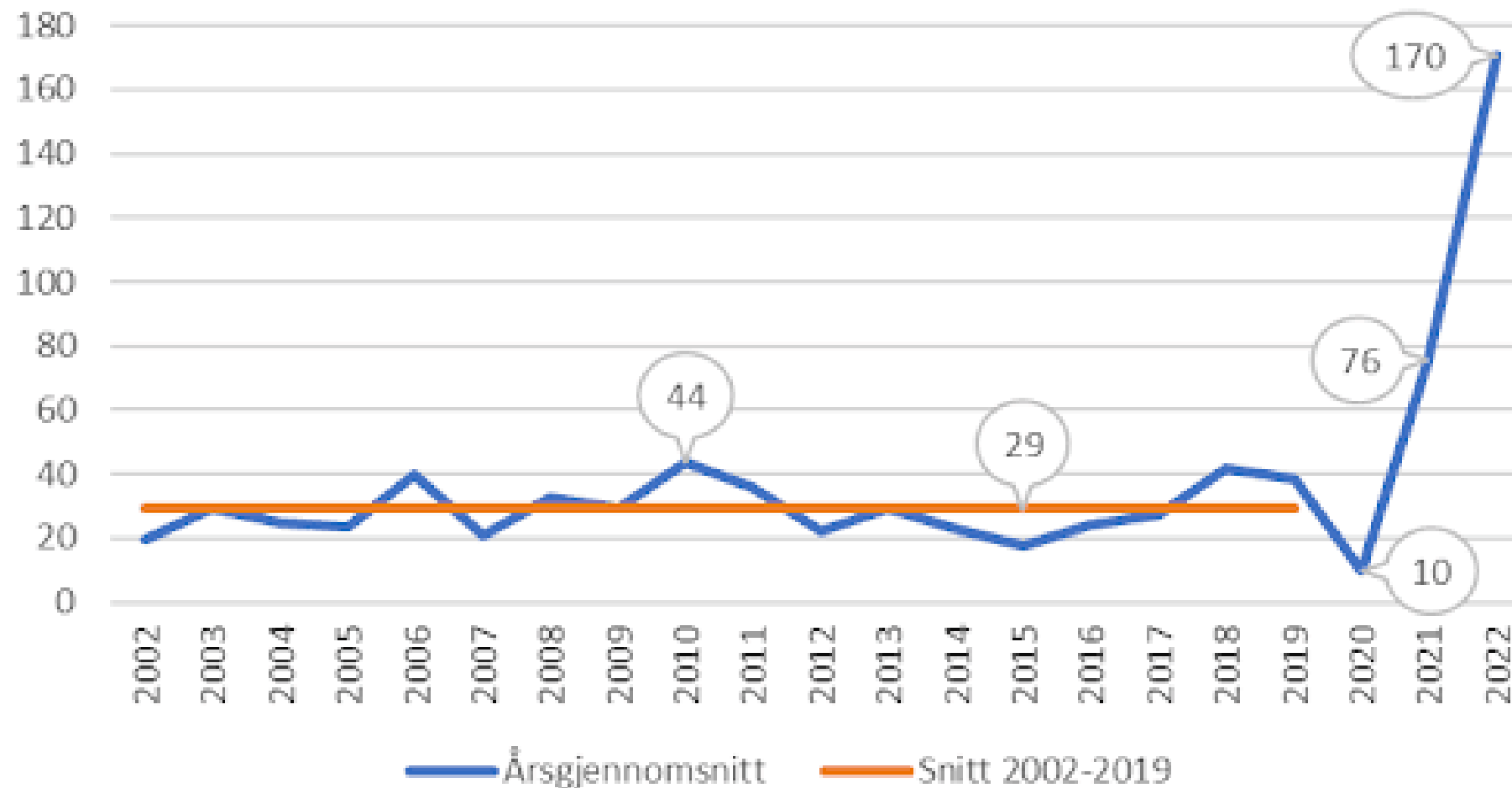


Bading Frarâdes
Bathing Not Advised

Grænet kloakklekkasje frarâdes bading
Because of sewage spill bathing is not advised



Gjennomsnittlig strømpris NO1 (øre/kWh)



Kilde: Nord Pool

A person wearing a hard hat, safety vest, and work clothes stands in a dark, circular tunnel. They are looking out of a large, circular opening at the end of the tunnel, where bright light is shining. The tunnel walls are rough and textured. The overall scene is dramatic and suggests a transition or a new beginning.

The status quo won't work any more.

There is no shortage of data – unlocking it is the challenge



Lack of system-wide visibility and siloed systems makes it hard to deploy resources accurately

True partnerships are rare

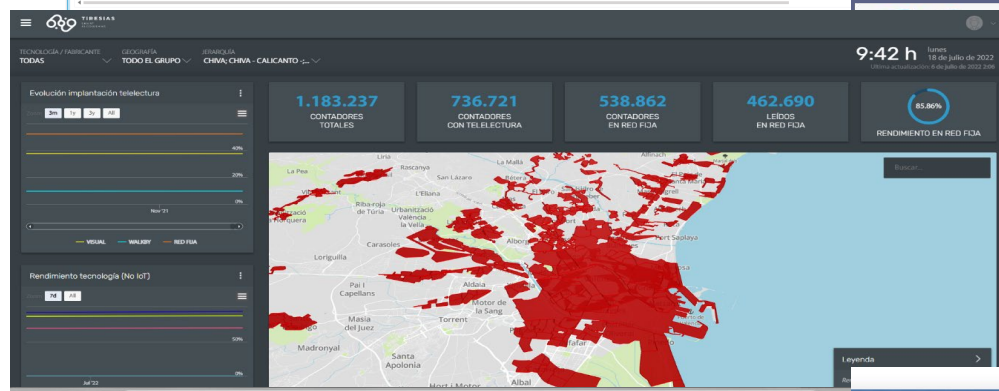
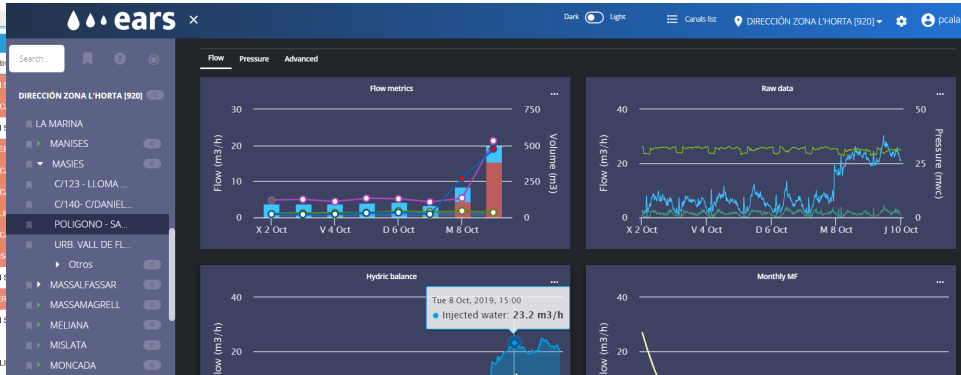
Solutions are often reactive

Many digital solutions are one-size-fits-all

Barra de avisos

Amstrar un encabezado de columna y soltarlo aquí al lado del grupo de esa columna

Aviso	Explotación	Localidad	Dirección	Fecha generación	Comunicante	Servicio	Moti
201901455	ASPE		Calle Soprano Ancha Arieta, Aspe, España	16/10/2019 18:09	ANGELES PIRLUZZELLA	AGUA	SIN
201901454	GANDIA		Calle Coleta (La), 21, Gandia, España	16/10/2019 18:00	MANOLO (EL PORTERO)	AGUA	POG
201901452	VALENCIA		Calle Torrela Miramar, 4, Valencia, España	16/10/2019 17:58	RAMON GARCIA	AGUA	SIN
201901451	SAGUNTO		Avenida Pais Valencia, 57, Sagunto, Sagunto/Sagunt...	16/10/2019 17:46	PASCUAL IBANEZ	AGUA	APE
201901448	ALZIRA		Calle Hort dels Frans, 64, Alzira, España	16/10/2019 17:40	RAQUEL BOLIDIA	AGUA	POG
201901447	ALZIRA		Calle Perez Galdia, 27, Alzira, España	16/10/2019 17:36	RAQUEL BOLIDIA	AGUA	POG
201901443	PUERTO DE SAGUNTO (SAGUNTO)		Calle Alberto Martinez, 8, Puerto de Sagunto (Sagunto)...	16/10/2019 17:09	FRANCISCO CORRECHER CARAVANCA	SANEAMIENTO	SAL
201901442	BEJUR		Carrer Cap Rubi, Bejur, España	16/10/2019 16:58	FRANCISCO GALLASTRA	AGUA	POG
201901438	ALTEA		Piso 0001, Liberación: CAJAHAMA-EL FURO, 3º T...	16/10/2019 16:40	LILJOMILA GLAZYRIMA	AGUA	AVAS
201901432	URB. LOS LAGOS (ALGINET)		Urbanización Los Lagos, Urb. los Lagos (Alginet)...	16/10/2019 16:03	SONIA BOSCH	AGUA	SIN
201901431	PUERTO DE SAGUNTO (SAGUNTO)		Calle Maligno, 13, Puerto de Sagunto (Sagunto)...	16/10/2019 15:44	FRANCISCO OIL CATALA	AGUA	CIER
201901425	URB. LOS LAGOS (ALGINET)		Urbanización Los Lagos, 208, Urb. los Lagos (Alginet)...	16/10/2019 15:14	CARMEN MONTES	AGUA	SIN
201901421				16/10/2019 15:05	ANIBAL PEREZ RUIZ	AGUA	
201901420	ALAGUÁS		Calle Albal, 2, Alaguás, Alaguás, España	16/10/2019 15:05	NIEVES SANZ ANTON	AGUA	SOL



Actuaciones Ávalon

Fecha (inicio real, inicio previsto)

AGREGACIONES TIPO TAREAS

- SANEAMIENTO: 24 actuaciones
- CALIDAD: 110 actuaciones
- MANT. INSTALACIONES: 23 actuaciones
- MEJORA RENDIMIENTO: 15 actuaciones
- MANT. RED: 79 actuaciones
- VERTIDOS: 10 actuaciones
- GIS: 3 actuaciones
- CONTADORES: 0 actuaciones
- TRABAJOS GENERICOS: 1 actuaciones
- ACOMETIDAS: 13 actuaciones

ESTADOS

- Inicial: 69 actuaciones
- En curso: 19 actuaciones
- Descartado: 1 actuaciones
- Finalizado: 189 actuaciones
- Cerrado: 0 actuaciones

REVISIÓN, INSPECCIÓN SANEAMIENTO(2022/238574-1)

EL CLIENTE INSISTE EN QUE ES INSOPORTABLE EL RUIDO QUE HACE ESTA TRAPA Y SEGUN EL ES URGENTE UNA SOLUCION, SI NO SE PUEDE REPARAR QUE SE CAMBIE, HABLAR DIRECTAMENTE CON ELY QUE NOS CONFIRME LA TRAPA QUE ES

Dirección: Avinguda Del Pais Valencià, 124, Algemesi, Algemesi, España

Fecha de inicio prevista: 15-07-2022 a las 00:00:00

Abrir actuación en Ávalon

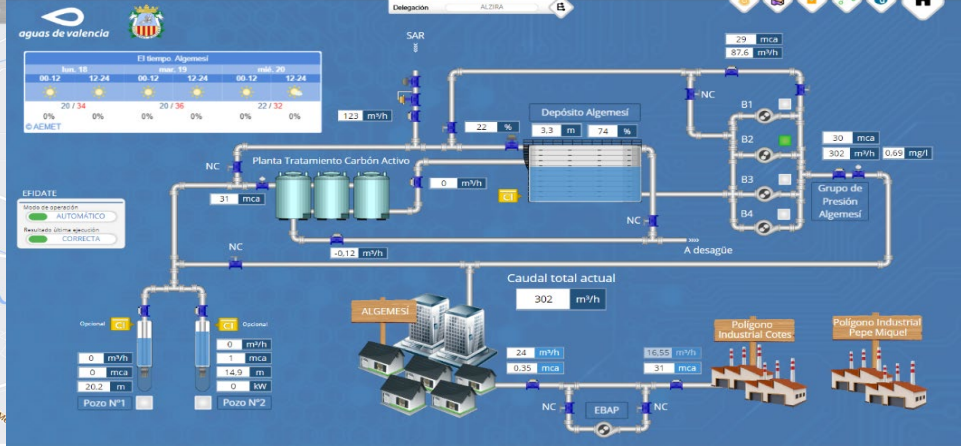
MANTENIMIENTO RED SANEAMIENTO(2022/238574-2)

CAMBIAR TRAPA 600 AVD. PAIS VALENCIA CON PARDINES

Dirección: Avinguda Del Pais Valencià, 124, Algemesi, Algemesi, España

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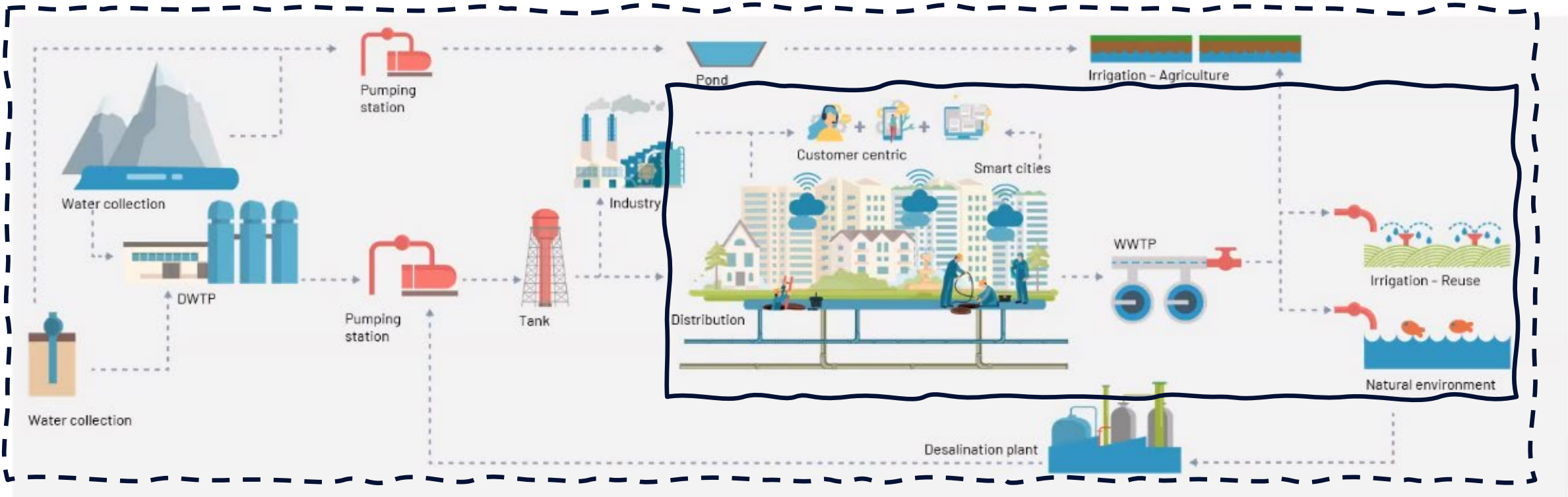


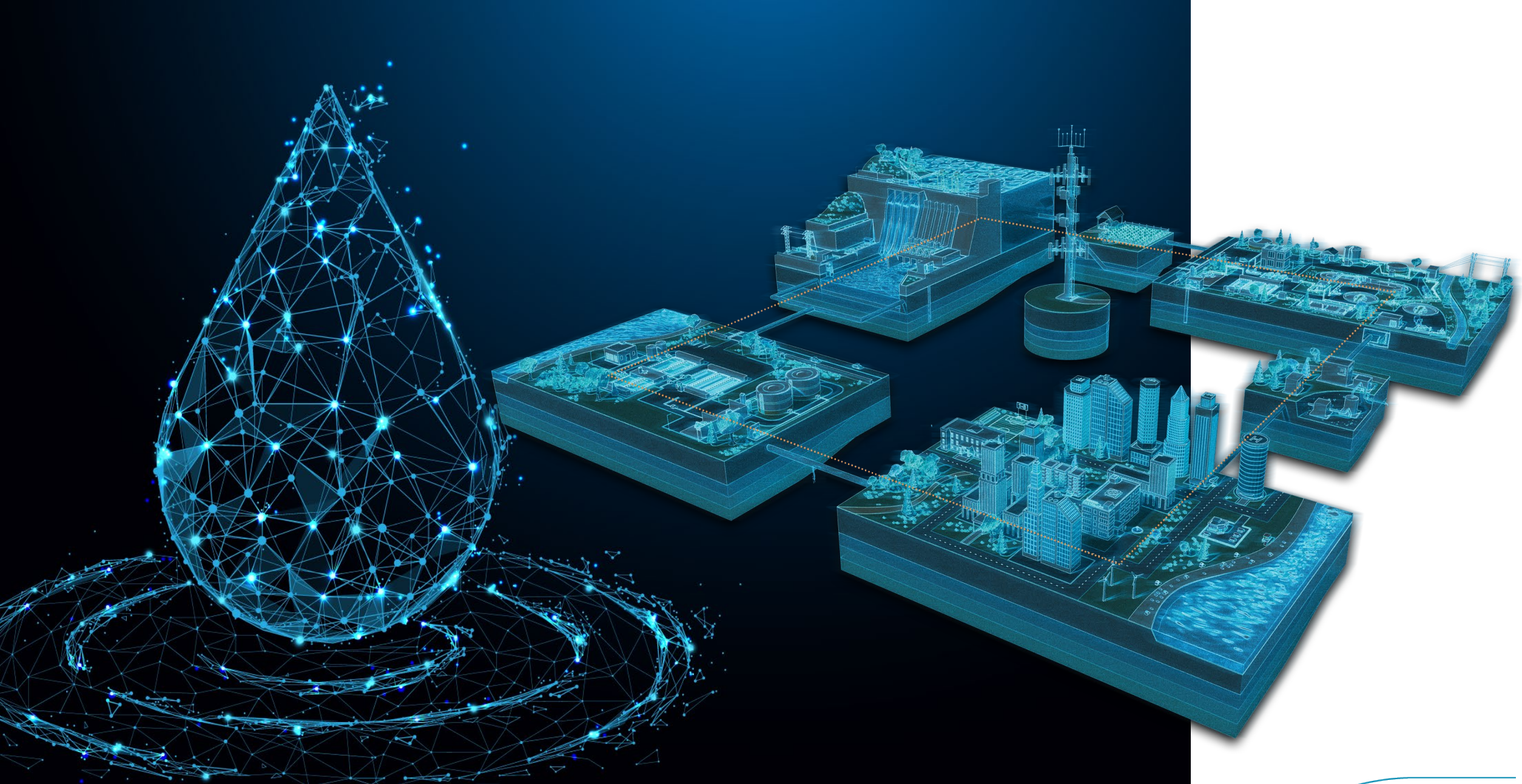
IT chaos

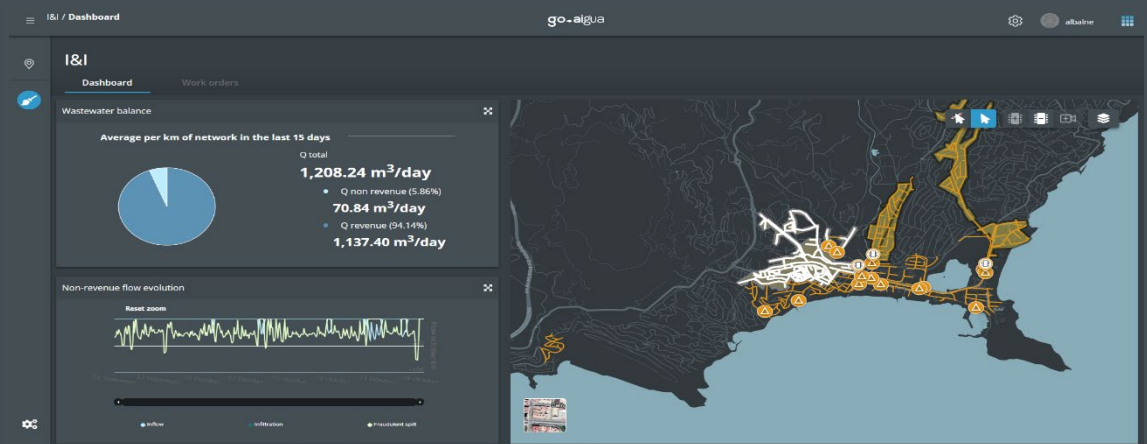
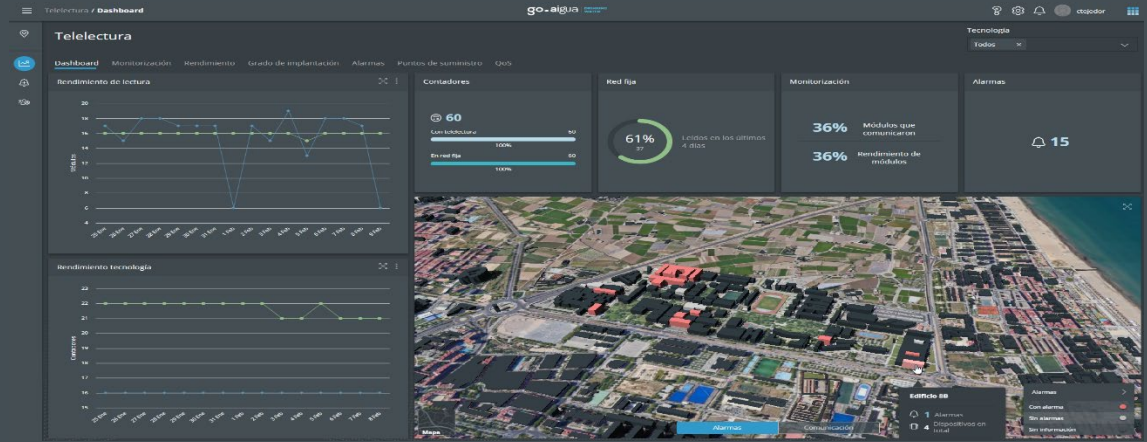
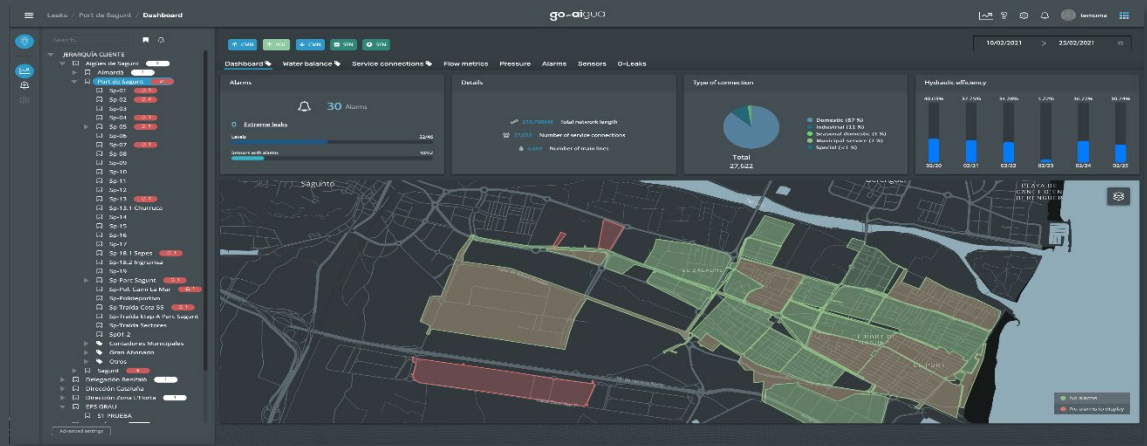


Holistic Data Management and Analytics Platform

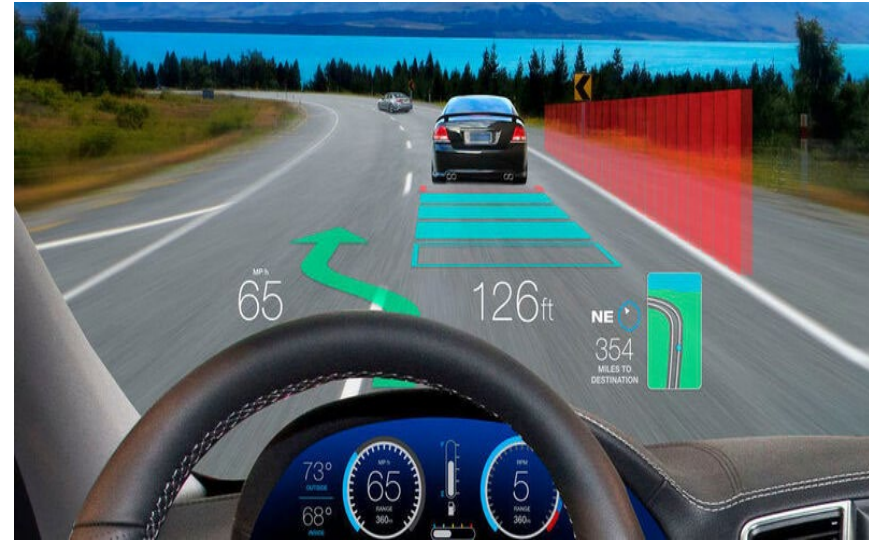
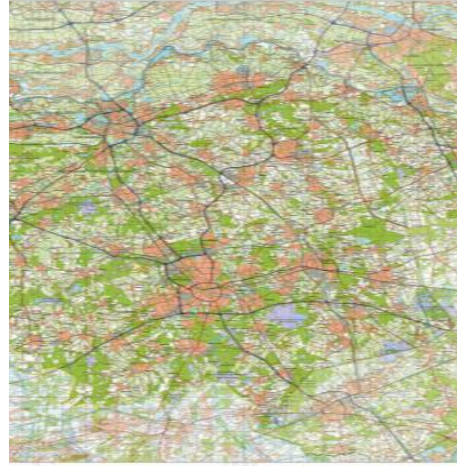
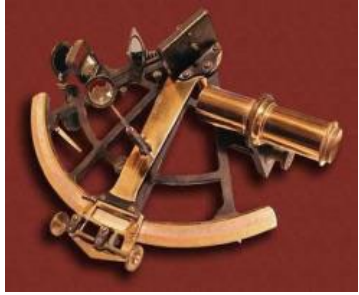
Data integration for an End to End Water Cycle Monitoring and Optimisation

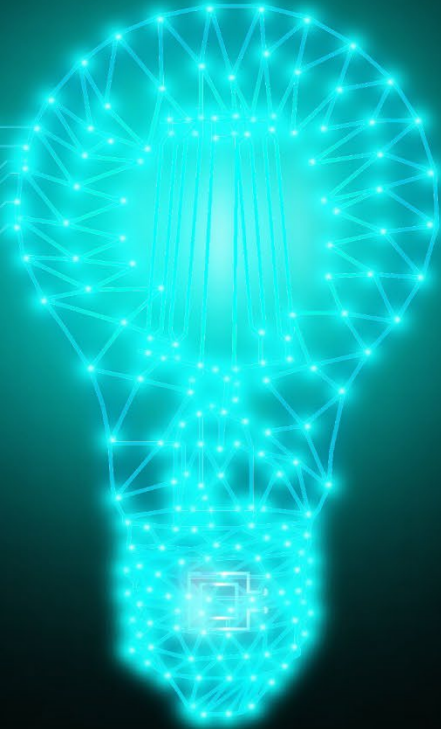




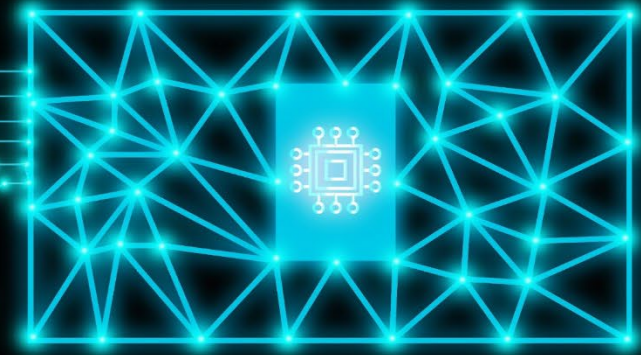


What is possible today and what is the future?



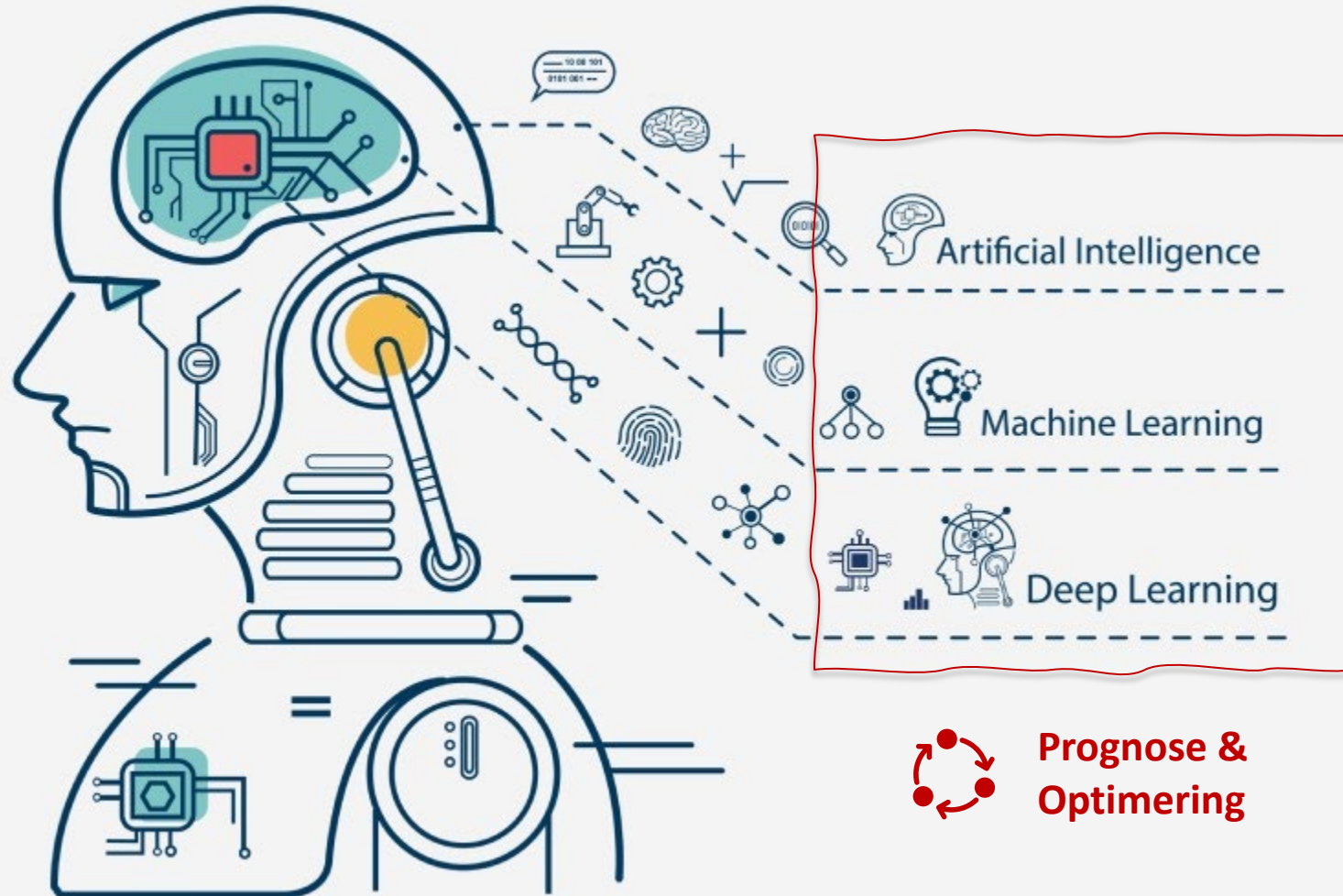


Digital Twins



Artificial Intelligence, Machine/ Deep Learning

Defintions and terminologies



Artificial intelligence

- The theory and development of computer systems to perform tasks that normally require human intelligence.

Machine learning

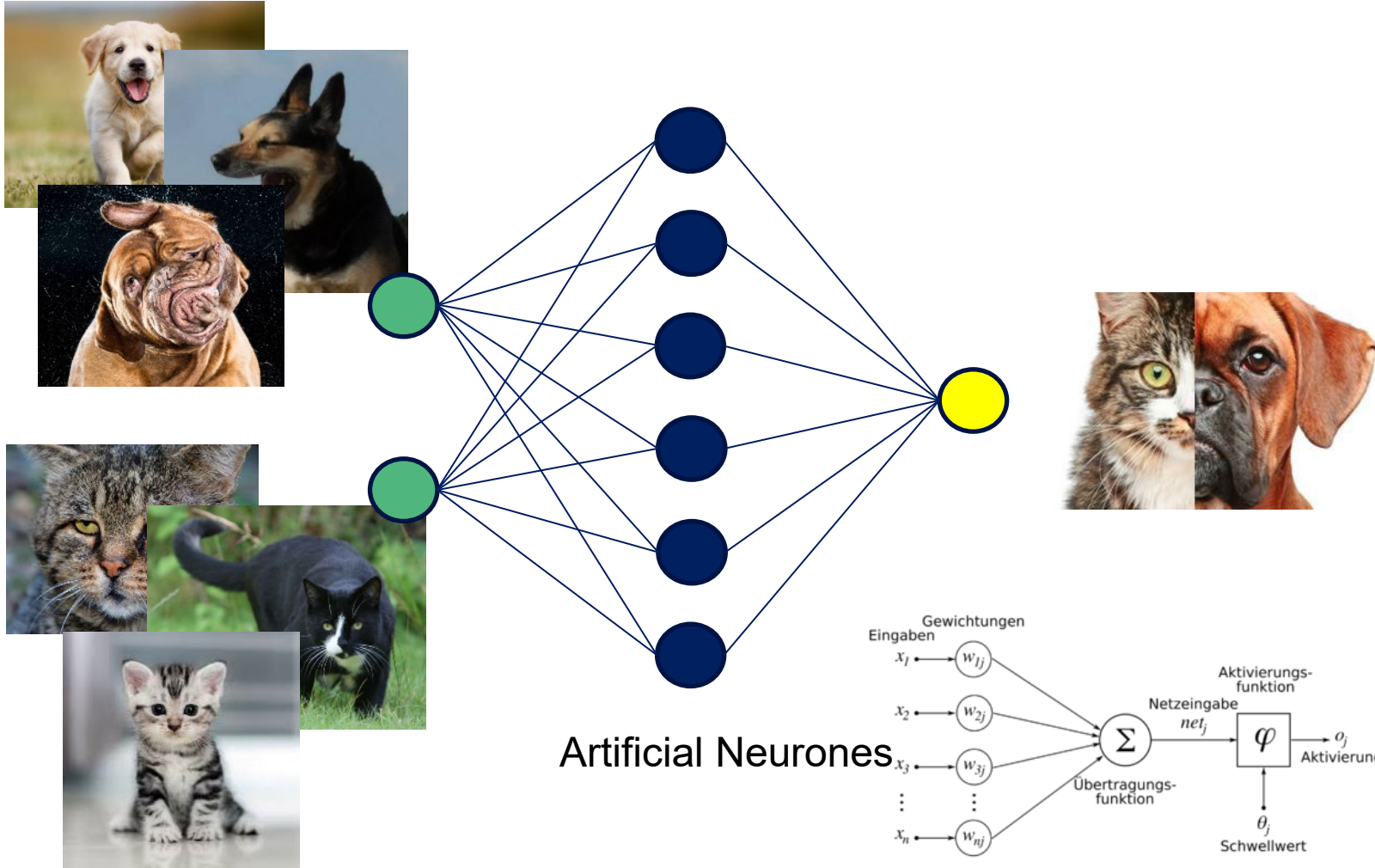
- Allows the computer/algorithm to learn without being explicitly programmed to do so

Deep learning

- Machine learning algorithms with a structure of algorithms (similar to the brain) called artificial neural networks

Artificial Intelligence, Machine/ Deep Learning

Prinziples of artificial neural networks



Input

Output

Artificial intelligence

- The theory and development of computer systems to perform tasks that normally require human intelligence.

Machine learning

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- Machine learning algorithms with a structure of algorithms (similar to the brain) called artificial neural networks

Artificial Intelligence, Machine/ Deep Learning.

Examples: These people do not exist



Artificial intelligence

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Artificial intelligence

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Machine learning

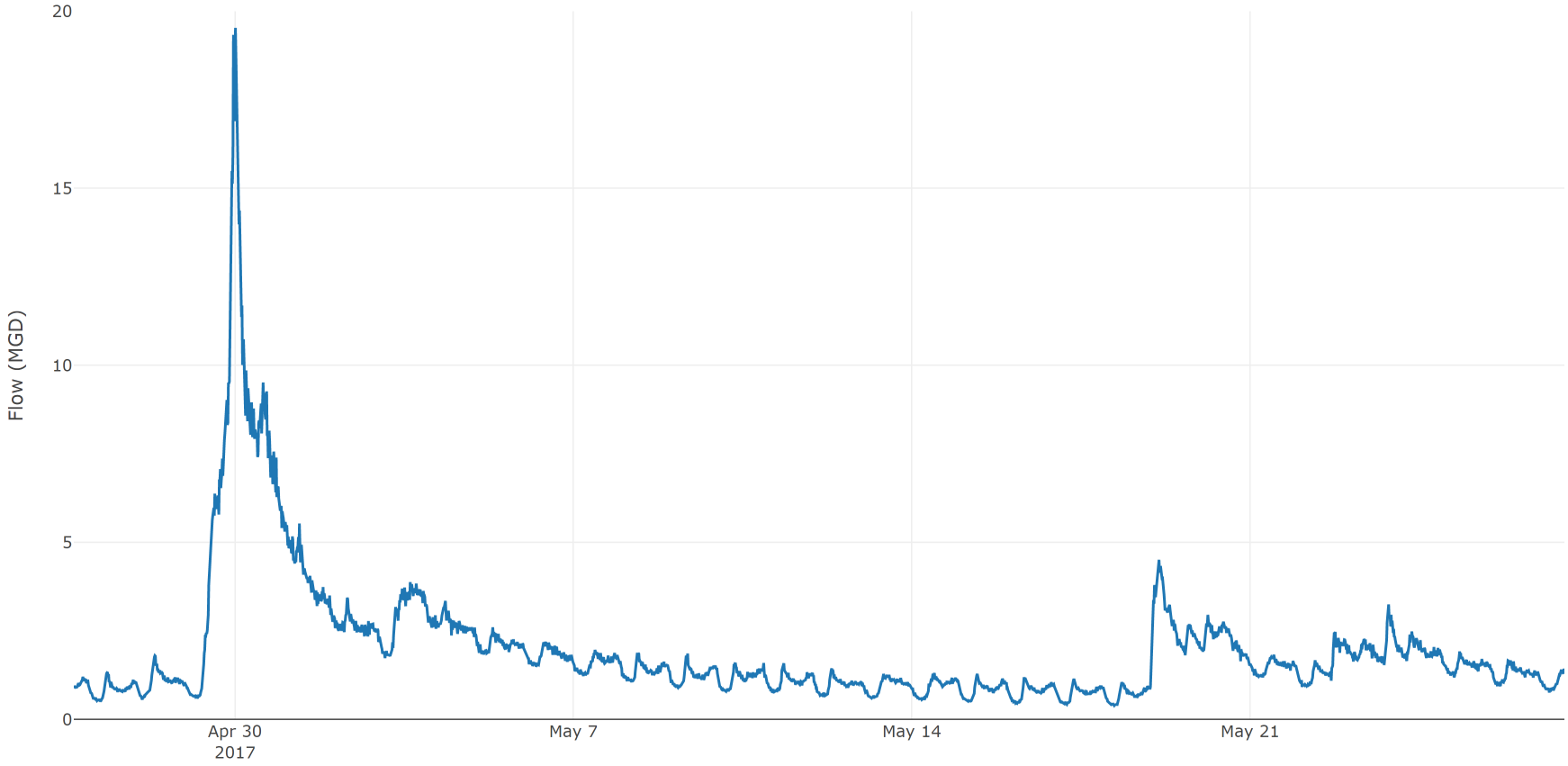
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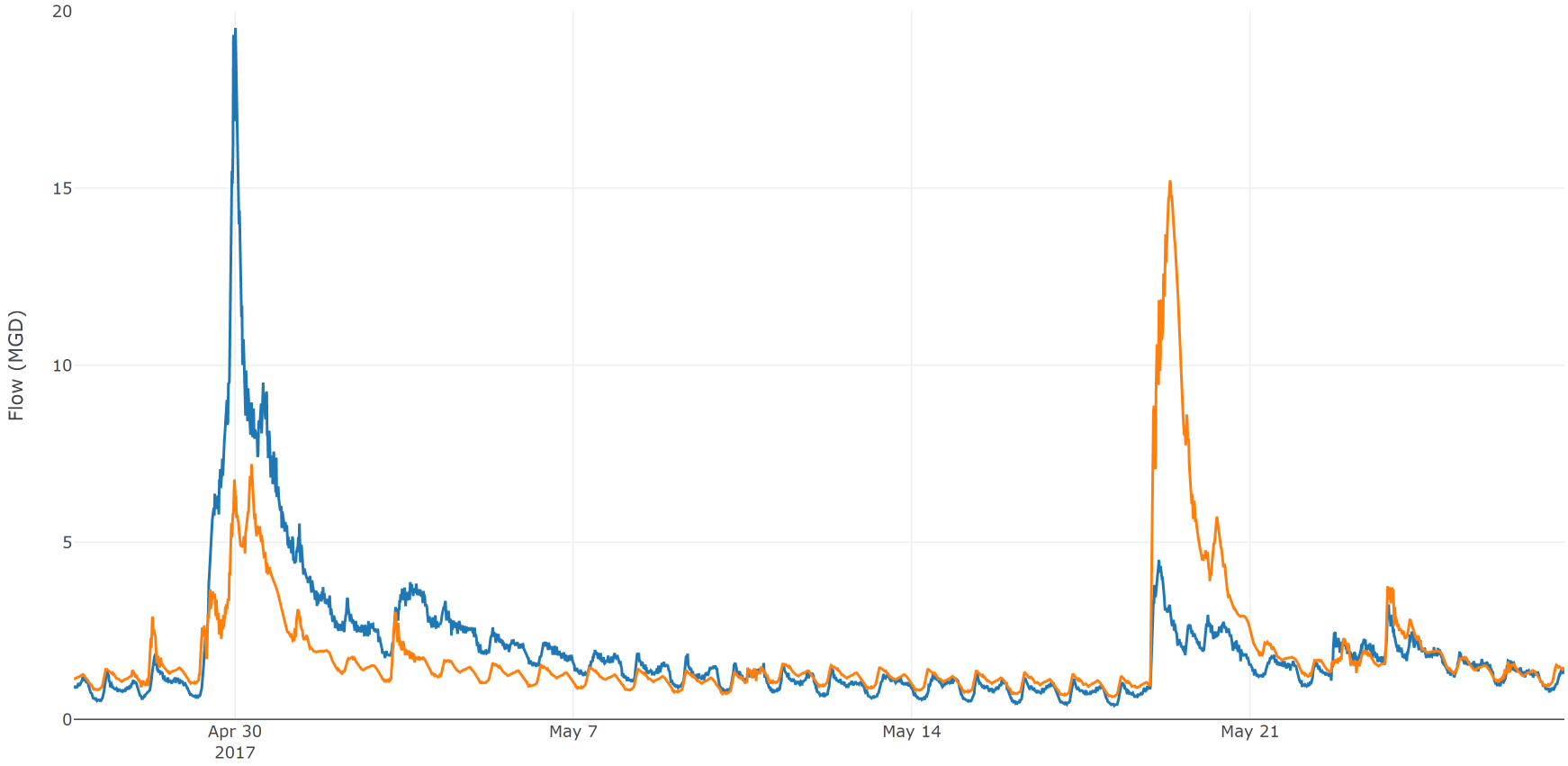
Kansas City, Missouri, USA

Measured Flow



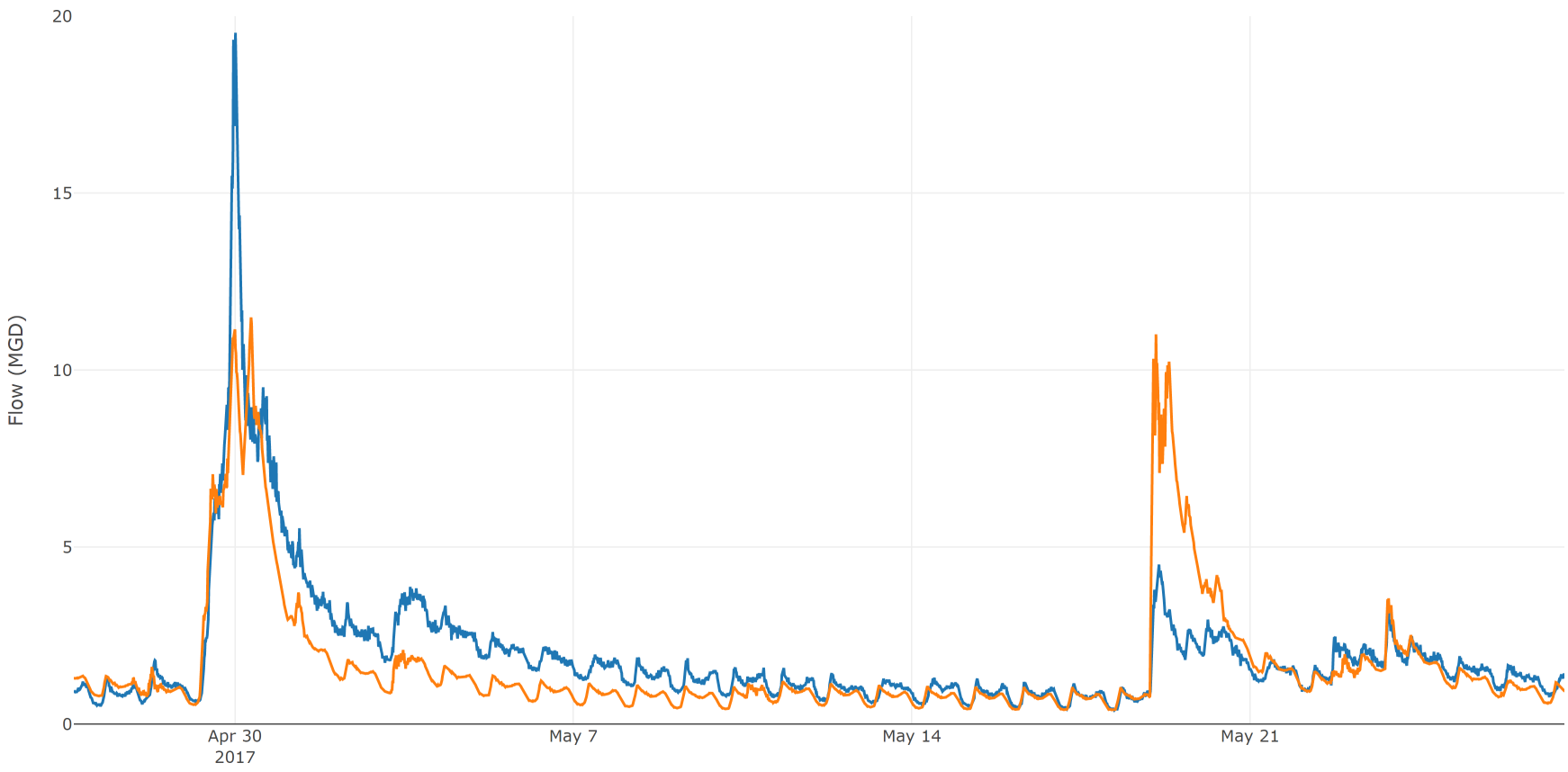
Kansas City, Missouri, USA

CHRS: 5 weeks training (10 events)



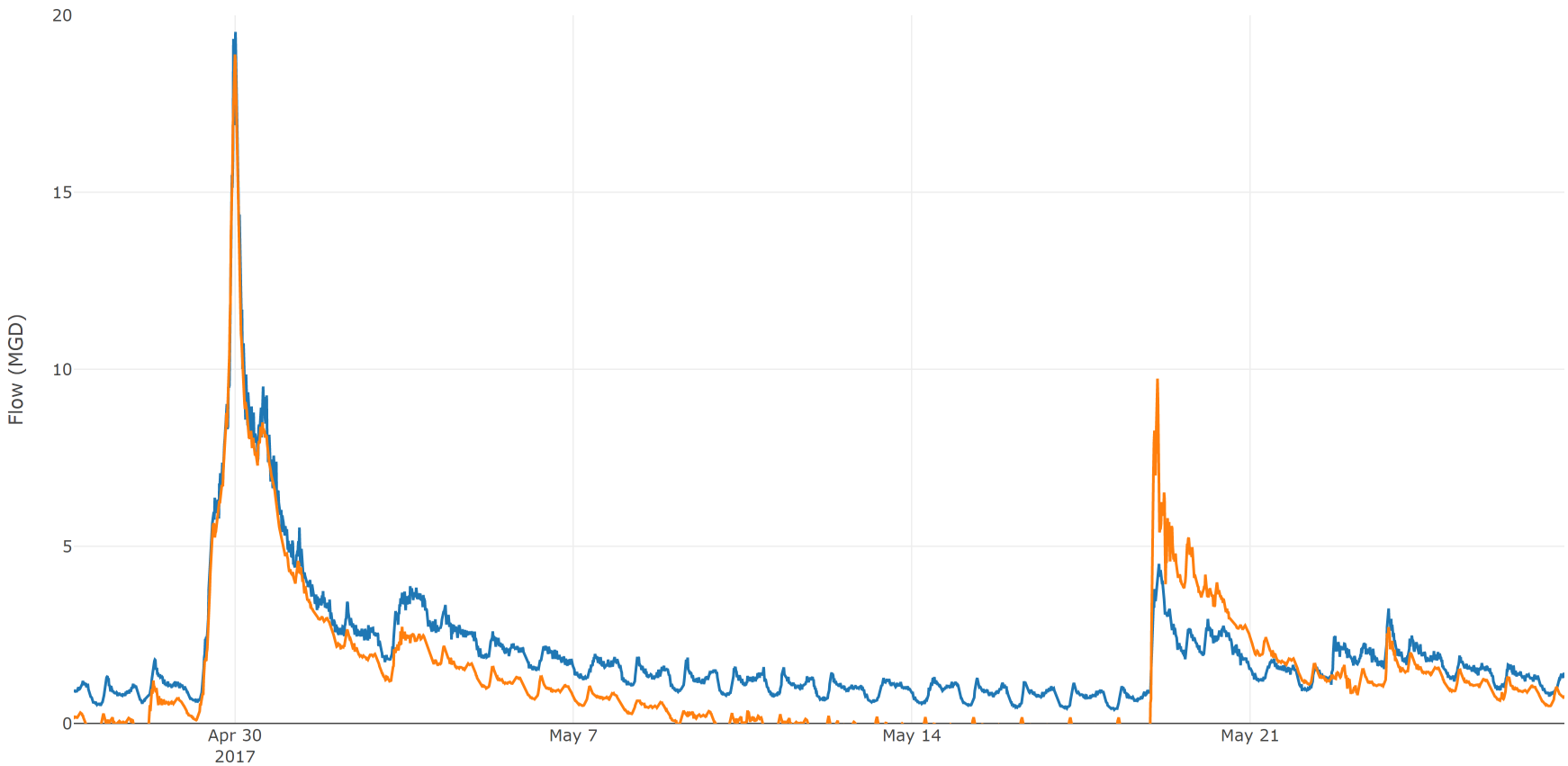
Kansas City, Missouri, USA

CHRS: 7 weeks training (12 events)



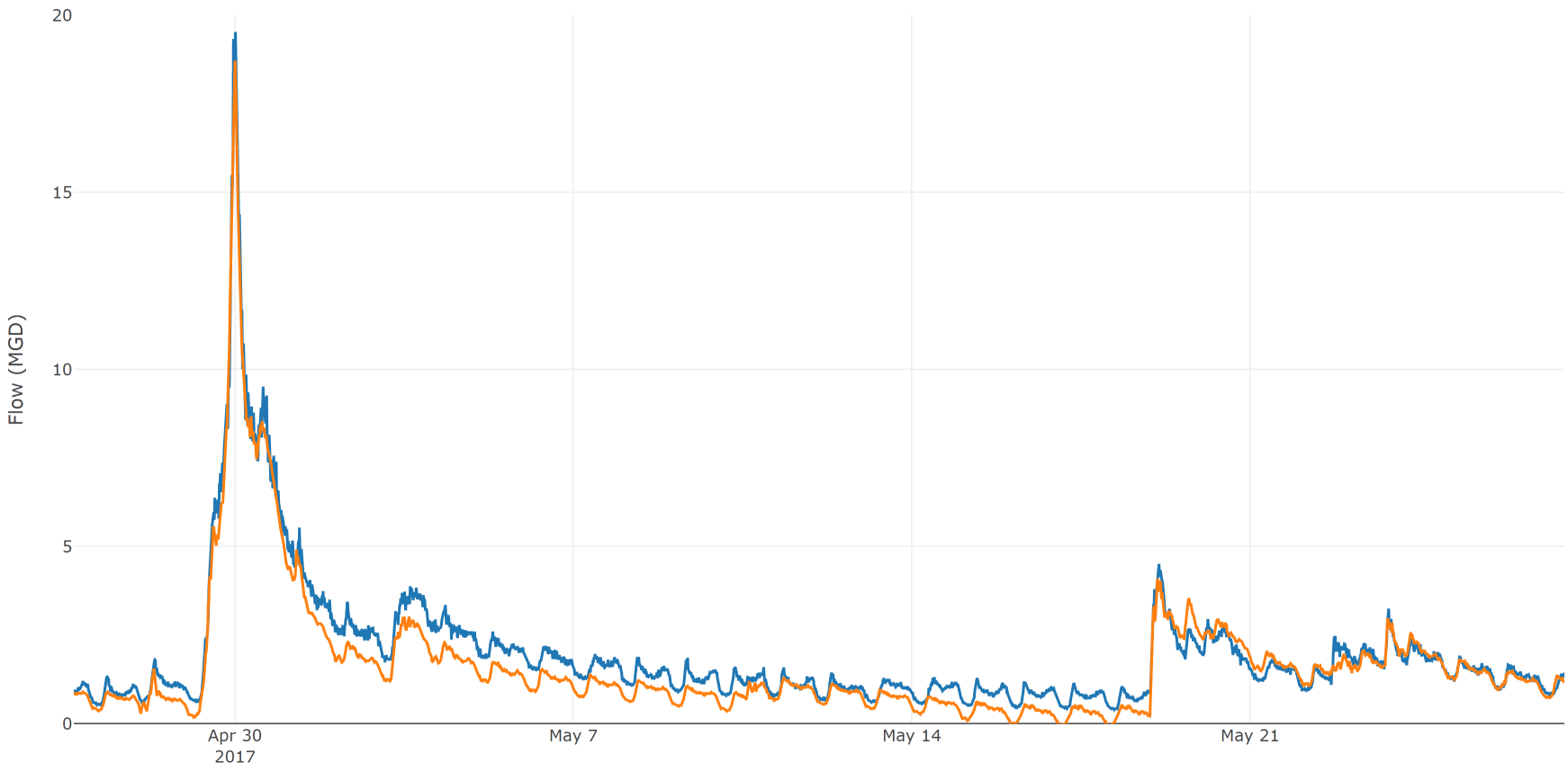
Kansas City, Missouri, USA

CHRS: 10 weeks training (19 events)



Kansas City, Missouri, USA

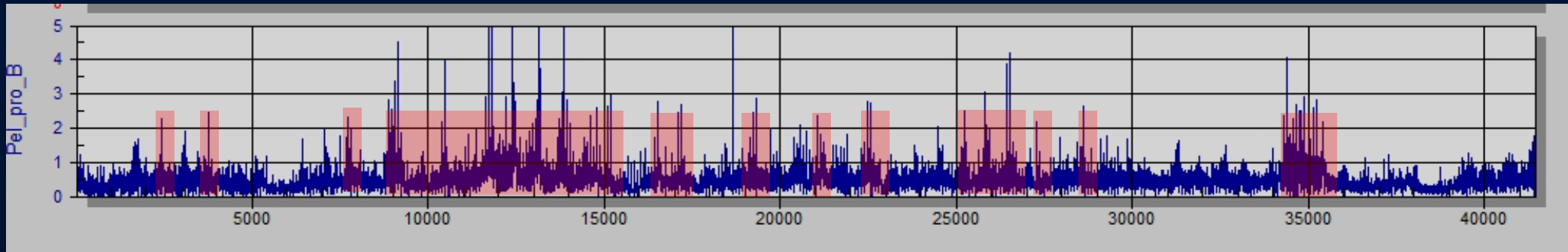
CHRS: 15 weeks training (31 events)



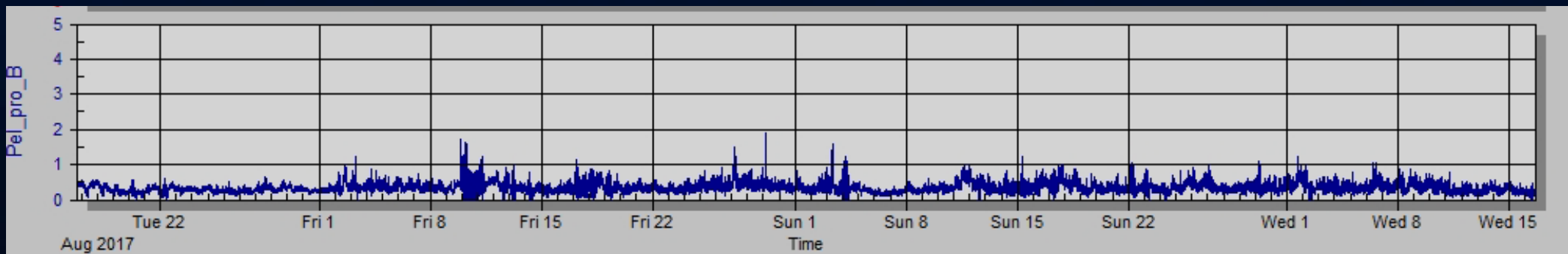


Energiforbruk (kWh/kg)

Før optimalisering



Etter optimalisering



EWE WASSER GmbH



30%
reduction in
aeration energy
usage

**1.2
MILLION**
kWh saved
annually

By optimizing operations, the utility saw a drastic reduction in unnecessary plant fluctuations and prevented situational peak energy consumption – saving enough energy to power 64 homes for one year.

CHALLENGE

EWE proactively aimed to optimize energy consumption and improve safety with better system control of chemical usage at the Cuxhaven treatment plant.

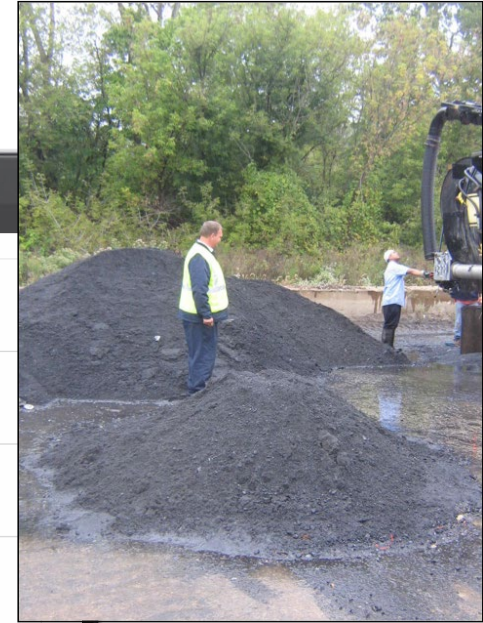
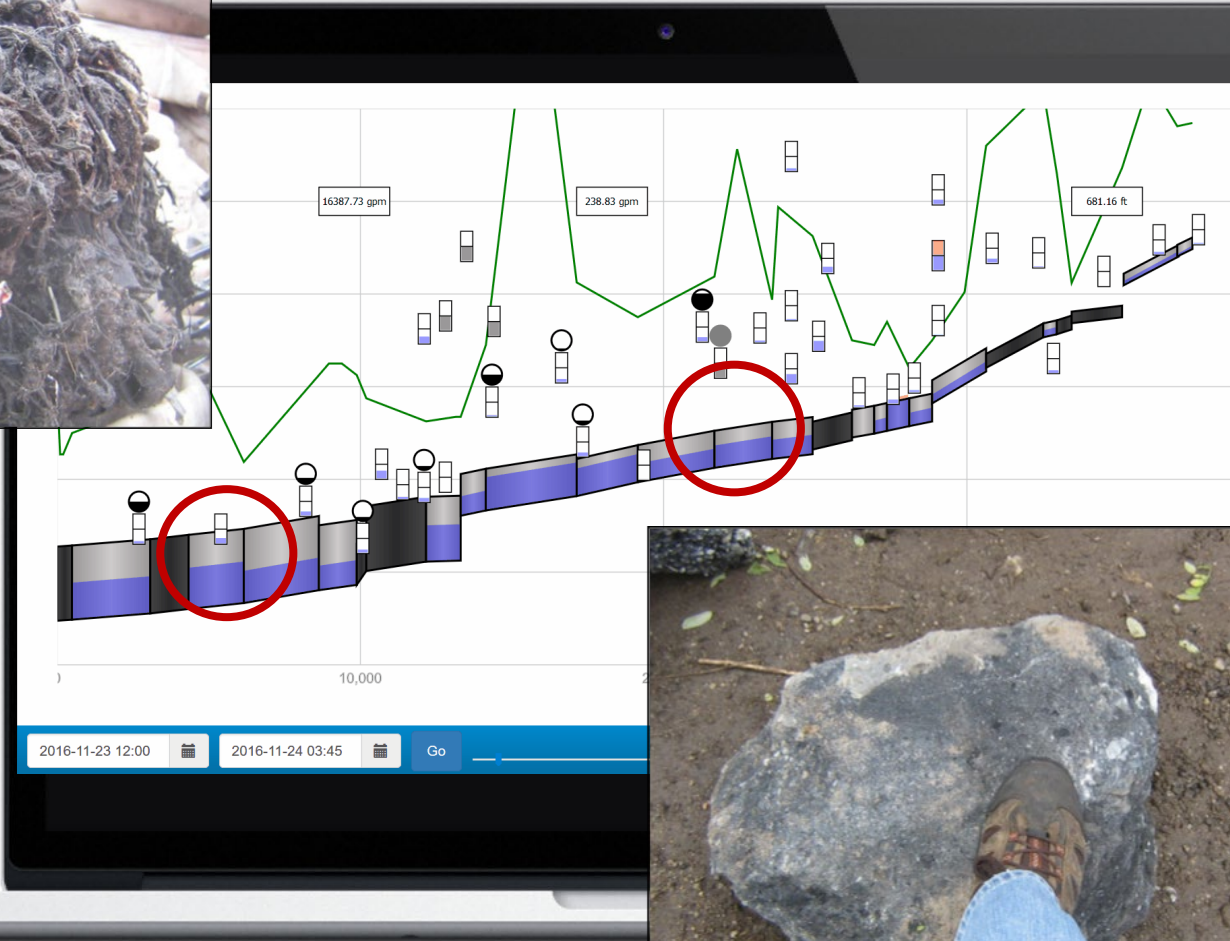
SOLUTION

Treatment System Optimization, a real-time digital monitoring and modeling solution that marries real-time input data and plant models to provide analysis, insight and control so plant managers can visualize, optimize and manage their treatment plant operations safer and at reduced cost.

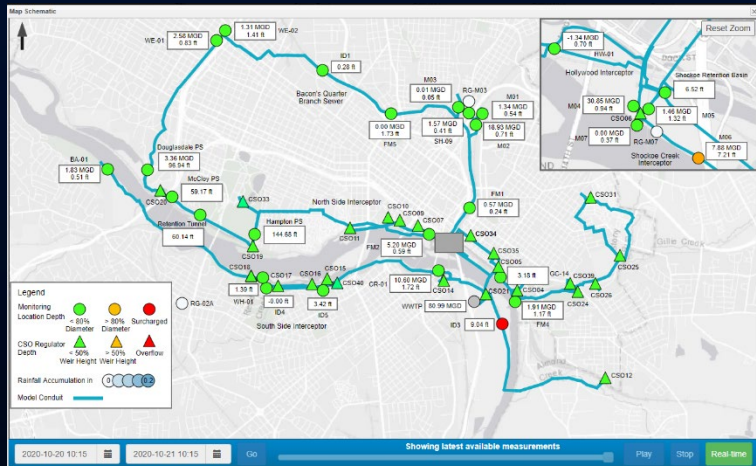
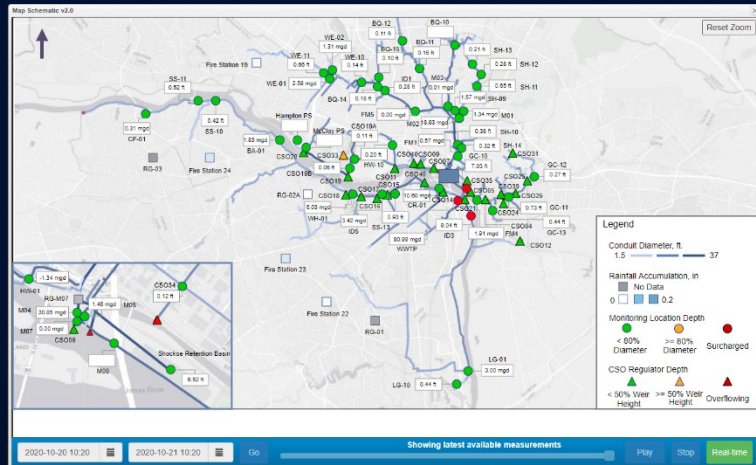


SENSE

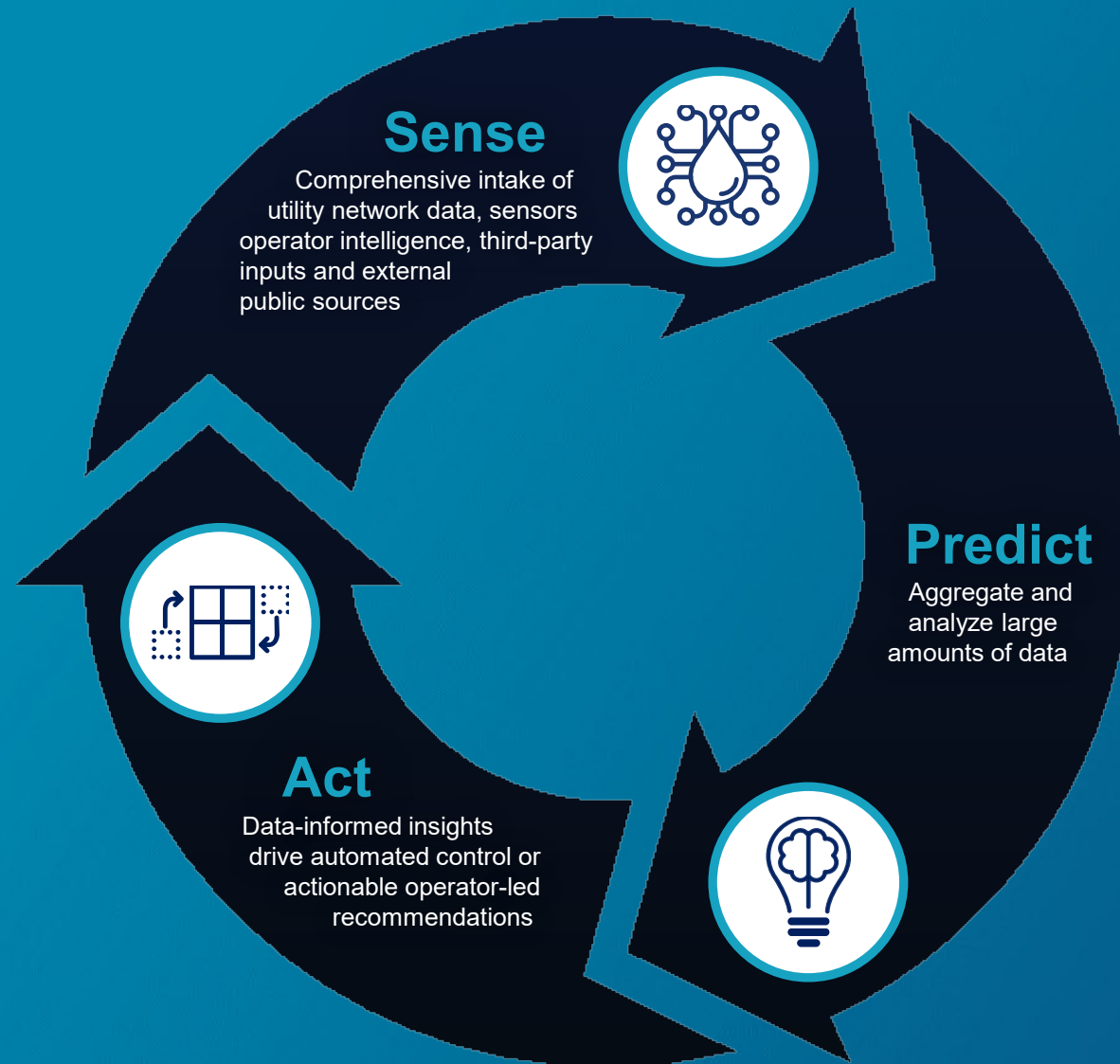
Turn on the Lights!



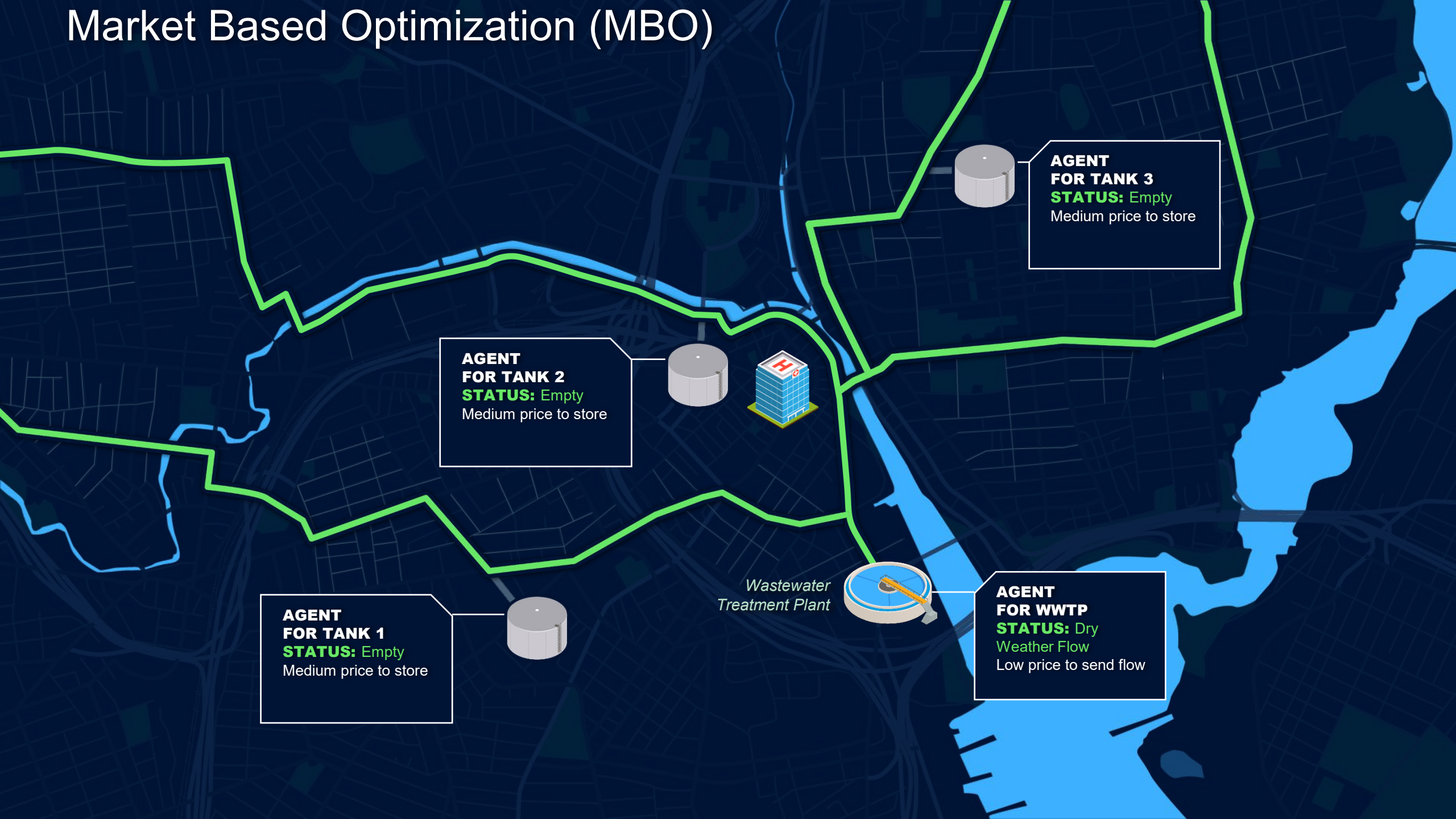
Example interface Richmond, USA



Continuous system improvement drives transformational outcomes



Market Based Optimization (MBO)



Rainfall is coming, increasing risk in the network...



AGENT FOR TANK 2
STATUS: Empty
Medium price to store

AGENT FOR TANK 1
STATUS: Empty
Medium price to store

AGENT FOR TANK 3
STATUS: Empty
Medium price to store

AGENT FOR WWTP
STATUS: Flows to plant start to increase
Still relatively low price to send flows

Wastewater Treatment Plant

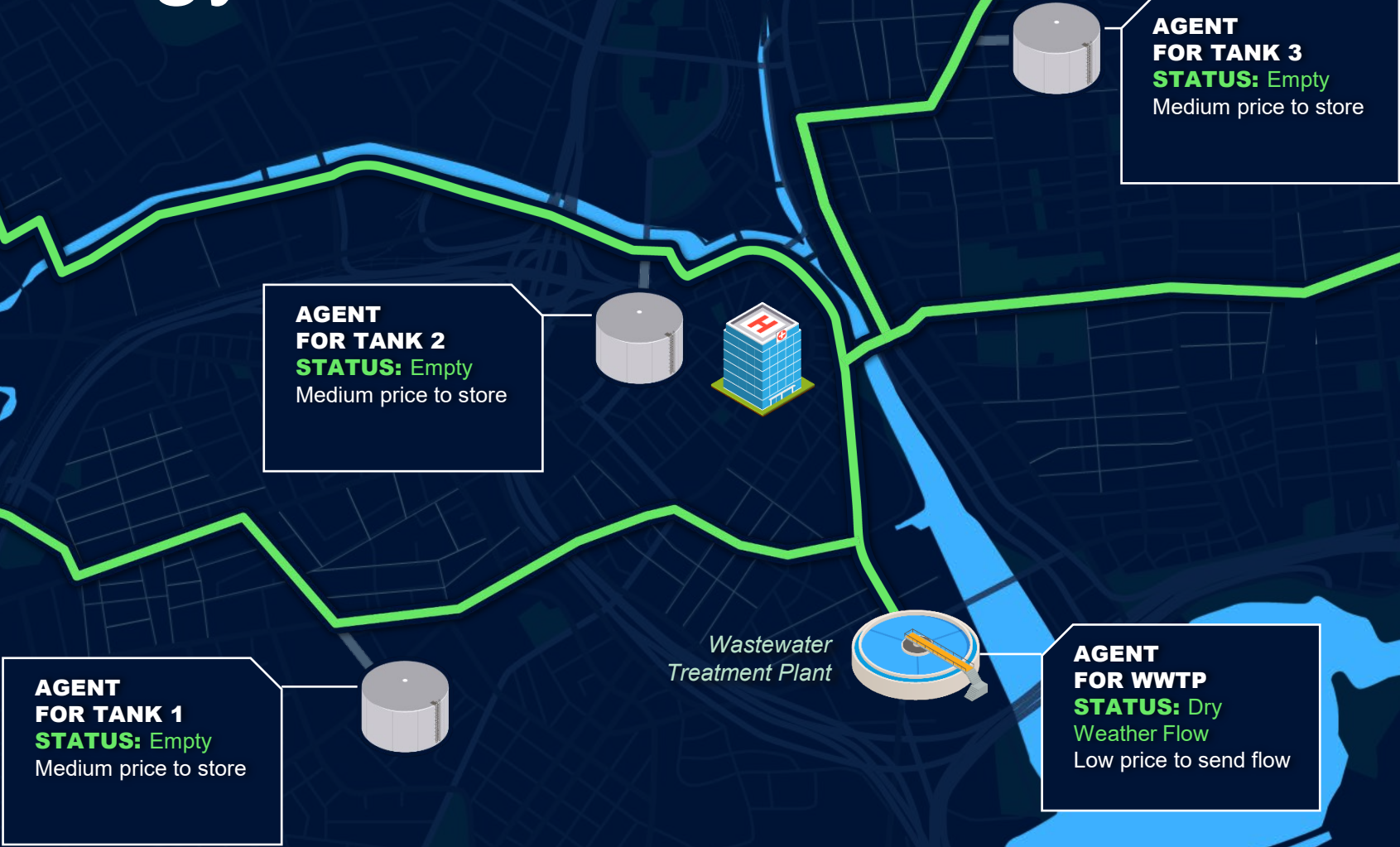
WWNO commands assets in balanced way



Rainfall decreases...



Network returns to dry weather conditions and strategy



Xylem Vue powered by GoAigua Architectuur

Real-time monitoring and actions on key indicators

Service Operations Center

BI Connectors

Dashboards & Reporting

Operational intelligence



Analytics, Optimization and Real-Time Decision Support

- Unified Network Management
- Unified Plant Management
- Leak Detection & Localization
- Meter Data Analytics
- Real-time What-If Scenarios
- Network Real-time Decision Support
- Biological Monitoring
- Clog Monitoring
- Flood (SSO) / CSO Prediction & Prevention
- Plant Real-Time Decision Support

Modulair data applications / modules



IoT Core

Domain Master Data

Data Science Framework

GIS Framework

Integrated Smart Water Engine

AMI/AMR

Sensors

SCADA, PLCs & IoT Sensors

Distributed Databases

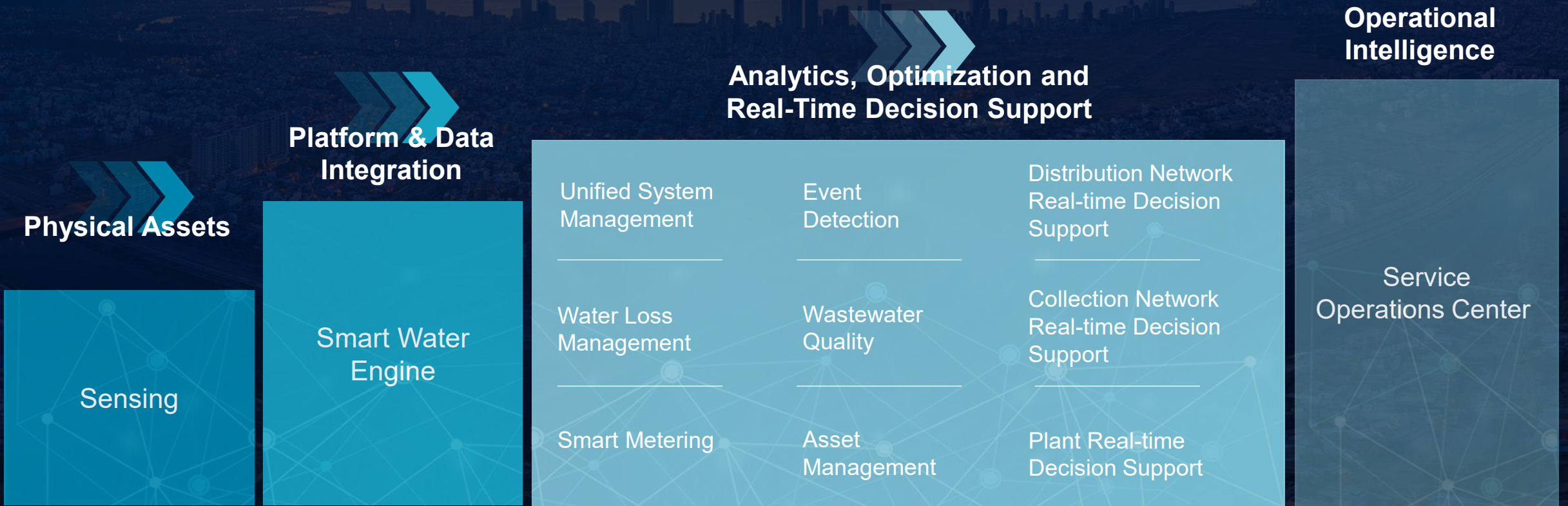
GIS, CMMS

Vendor agnostic, integrates with any technology

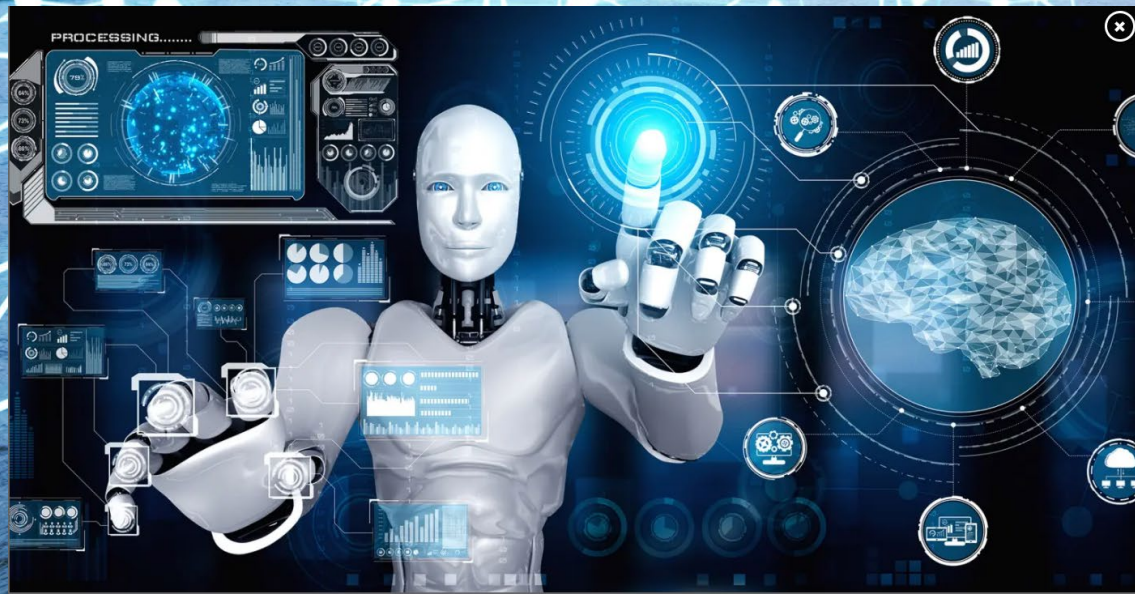
Over 120 protocols/systems supported

The Path to Optimized Performance Across the Water Cycle

Leveraging technology to support clients in Water and Wastewater



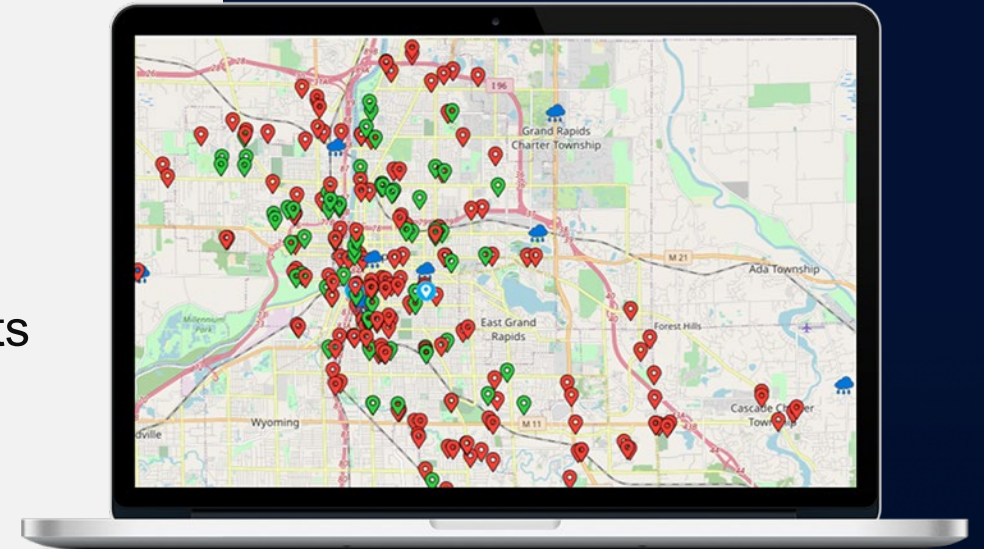
HVA KAN VI OPPNÅ?





Visualize key insights from your network

- Visualization of network water level and flow in real-time
- Online data repository of network sensor data
- Visual displays entirely tailored for operators, with key insights at your fingertips
- Export data to support additional modelling activity
- Single-view UI for immediate interpretation of current state



Realized results

EUR 840M

reduction in estimated costs to achieve regulatory compliance

City of Grand Rapids

Benefits:

Understanding of hydraulic performance of your network in real-time

Diagnose and investigate issues in the system

City of Grand Rapids

€835M

reduction in
estimated costs to
achieve regulatory
compliance

The City demonstrated that, by focusing on a few critical areas needing improvement, its infiltration and inflow problem could be solved for EUR 25-45 million as opposed to the original EUR 880 million estimate.

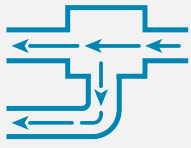
CHALLENGE

For compliance purposes, the City needed analytic data to certify infiltration and inflow performance, and how their system behaved during a variety of wet and dry weather conditions.

SOLUTION

Wastewater Network Optimization, a real-time digital monitoring and modeling solution that leverages sensor data, hydraulic monitoring and machine learning to help utilities visualize, predict and control their wastewater networks more efficiently.





Reduce magnitude and frequency of **combined sewer overflows** through improved capacity utilization

- Generate in-depth understanding of emerging CSO discharge risk by capturing and analyzing system impacts in real-time, including network conditions and weather forecasts
- Receive optimized control recommendations to fully utilize existing assets and infrastructure
- Automatically track and report on spill events



Realized results

11+ million

m3 reduction in CSOs

Buffalo Sewer Authority

Benefits:

Respond more effectively to CSO discharges

Meet environmental and regulatory targets and customer expectations for performance transparency

Reduce need for costly and lengthy civil interventions and CapEx

Buffalo Sewer Authority

📍 Buffalo, New York, United States

11 MILLION+
M2 reduction
in CSOs

€127M+
reduction in CapEx
spending

“Our real-time control program, led by the team at Xylem, has delivered more than four times the expected performance. It is hands down the most cost-effective program in our long-term control plan.”

— OJ McFoy, General Manager

CHALLENGE

The City faced a EUR 335 million Long-Term Control Plan as a result of nearly 7,5 billion liters of combined sewer overflow annually into receiving waterways.

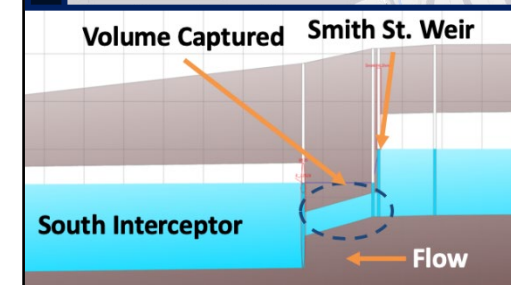
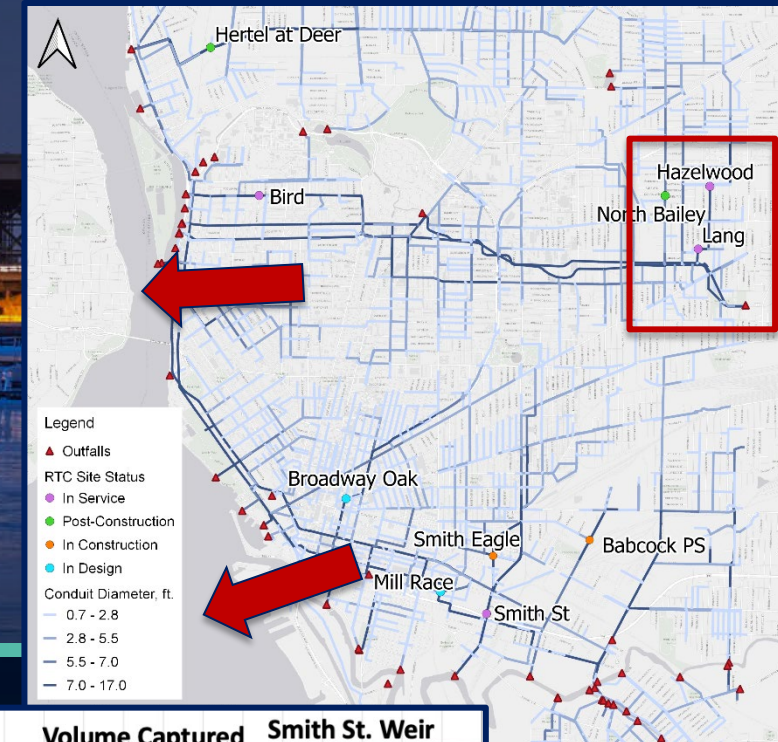
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Buffalo Sewer Authority

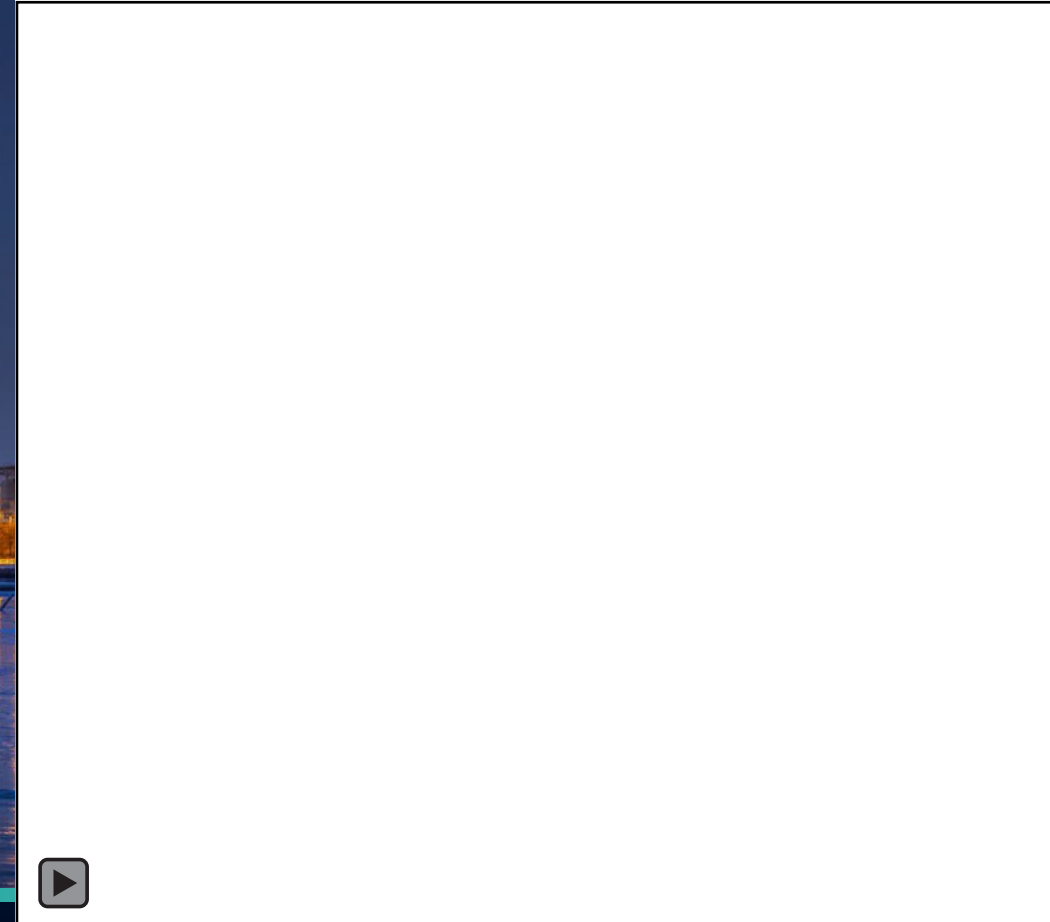
- Real Time Control Strategies:
- Coordinated inline storage
- Pump station optimization/storage
- Recapturing overflow volume
- Dynamic underflow



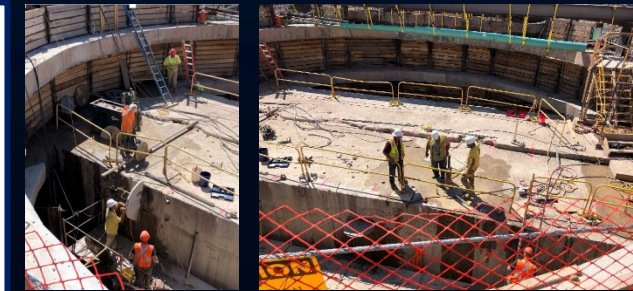
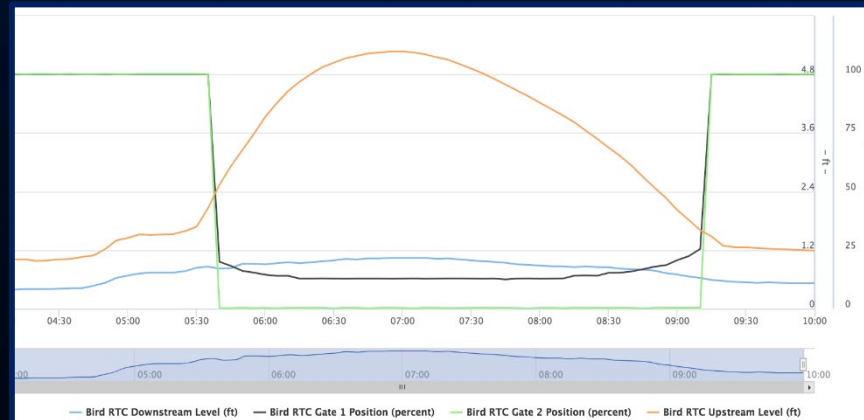
Hazelwood

Lang Ave

Buffalo Sewer Authority



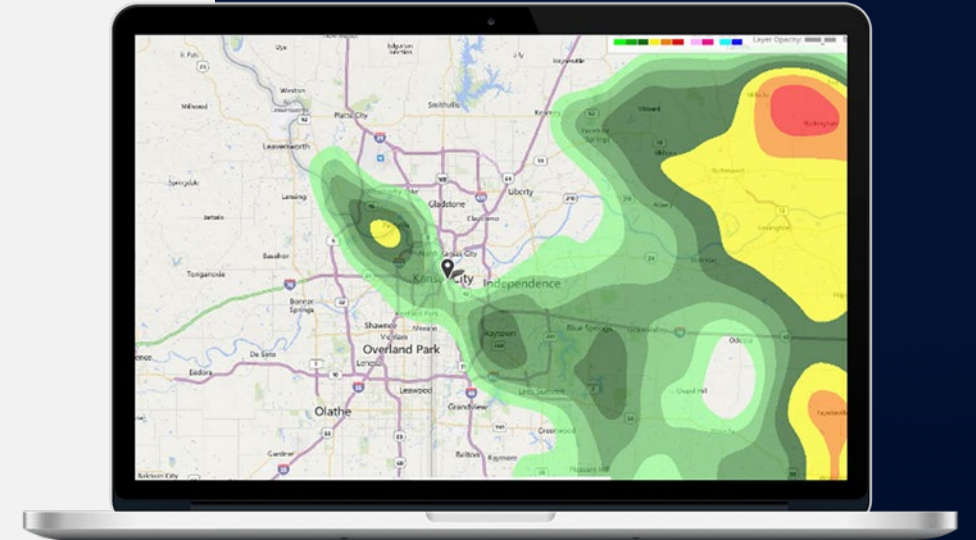
- Citywide inline storage strategy
- With only 6 of up to 16 sites operating, BSA reduced CSO by 108 activation and 5.3 billion liters in 2020
- Achieve compliance in less time with hundreds of millions in CIP cost avoidance





Decrease likelihood and impact of stormwater flood events

- Optimized control recommendations to fully utilize existing assets and infrastructure
- Capture and analyze system impacts in real-time, including network conditions and weather forecasts
- Network-wide insights of existing and emerging sewer flood risk



Realized results

EUR 440M

CapEx savings

City of South Bend

Benefits:

Increase customer service levels and deploy support more quickly

Reduce need for costly and lengthy civil interventions and CapEx

City of South Bend

- **Population: 100,000**
- **Median Household Income: EUR 30.000**
- **Consent Decree: EUR 750 million**
- **3,8 Billion Liters Annual CSO Volume**

3,8
MILLION+

M3 annual
reduction in CSOs

€ 440M+

estimated CapEx
savings

“ We spent 440 million EUROS less than originally estimated, achieving the same environmental benefit and level of service, just by optimizing the existing system in the ground.”

– Eric Horvath, Director of Public Works

CHALLENGE

Average of 3,5 – 7,5 billion liters of combined sewer overflow annually into the Saint Joseph River.

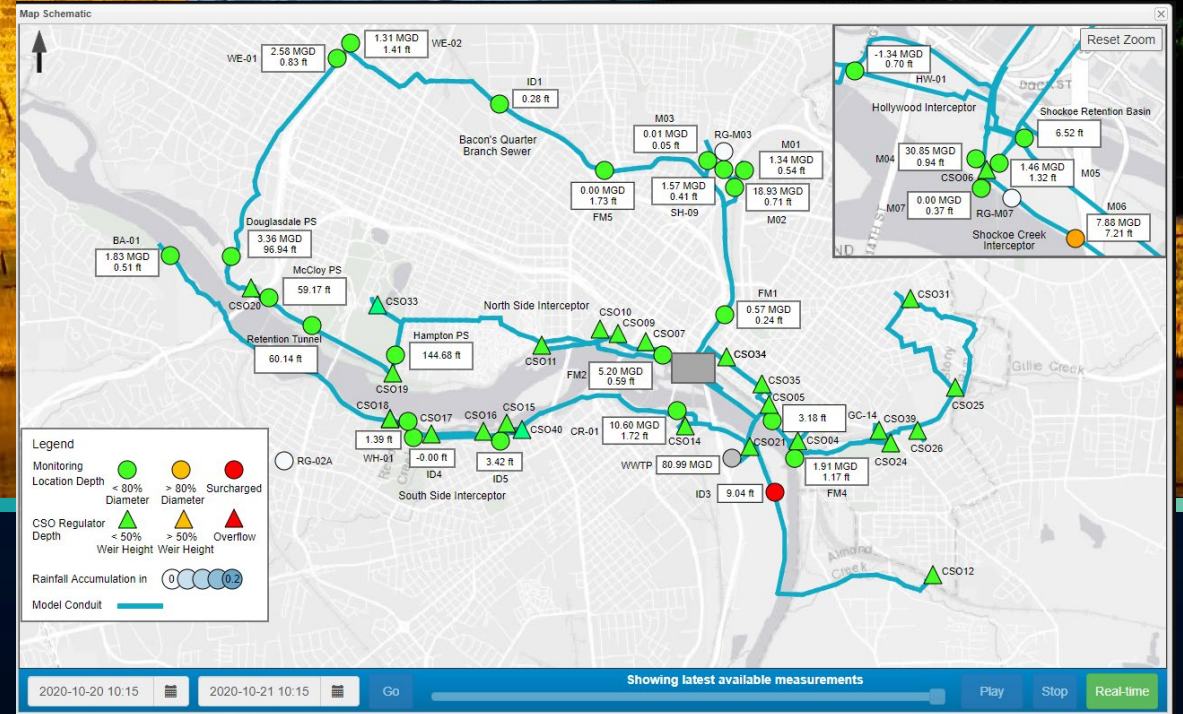
The City faced a Long-Term Control Plan of more than EUR 750M.

SOLUTION

Wastewater Network Optimization, a real-time digital monitoring and modeling solution that leverages sensor data, hydraulic monitoring and machine learning to help utilities visualize, predict and control their wastewater networks more efficiently.



City of Richmond



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Let's Solve Water