Smart Water Network: New Technologies for Intelligent Urban Water Infrastructure
Challenges for Water Managers

• Growing population, mostly in cities
• Rising water demand
• Investment deficits and aging infrastructure
• Endangered water quality
• Changing climate patterns
• Rising energy costs
• Regulation increasingly complex
Identify challenges in water & wastewater business

### Global mega-trends

<table>
<thead>
<tr>
<th>Climate change and resource scarcity</th>
<th>Demographic and social changes</th>
<th>Rapid urbanization</th>
<th>Environmental protection</th>
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<tbody>
<tr>
<td>High energy costs</td>
<td>Droughts and floods</td>
<td>Water scarcity</td>
<td>Capital constraints</td>
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<td>Aging workforce</td>
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<td>Water Contaminants</td>
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<td>Regulatory compliance</td>
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### Water challenges

- Climate change and resource scarcity
- Demographic and social changes
- Rapid urbanization
- Environmental protection

### Daily activities of a water manager

- Minimizing energy and operational expenditure
- Preventing combined sewer overflow
- Planning future water resources
- Managing a network of capital assets
- Minimizing loss of process expertise
- Source water and ecosystem monitoring
- Eliminating non-revenue water
- Ensuring regulatory compliance and reporting

- Emergency stormwater relief
- Source water diversification
- Consumer engagement on water conservation
- Capital investment planning
- Recruiting of qualified technical expert
- Treating a range of water types and emerging contaminants
- Network pressure management
- Monitoring treated water and wastewater quality

- Water conservation
- Water scarcity
- Capital constraints
- Aging workforce
- Water contaminants
- Aging infrastructure
- Regulatory compliance

- Monitoring treated water and wastewater quality
- Condition assessment and preventive maintenance for assets

**NOT EXHAUSTIVE**
Need for a holistic, long-term approach to Water Management
A better understanding of Smart Water solutions gives **rapid rewards** from **Small, incremental changes**. The transition to smart water solutions does not necessarily involve complex systems.

### Intelligent equipment
- **Definition**: Equipment, system and solution capable of self-optimization in-situ for enhanced performance – incl. meters, pumps, mixers, treatment and sensors
- **Value for water managers**: Reduces time and effort needed to monitor and maintain critical technologies

### Smart networks
- **Definition**: Network collecting information across a number of equipment to provide exhaustive real-time status information of an overall system
- **Value for water managers**: Enables remote and continuous monitoring of operations and real-time reactive management and maintenance

### Digital solutions
- **Definition**: Solution combining historical and current data with algorithmic decision support to provide data-driven forecast of the status of an overall system
- **Value for water managers**: Enables preventive adjustments to operations and proactive management of the system based on data-driven decisions
Intelligent Equipment

• Accurate data is the base for decision making
• Maintenance free or low maintenance
• Built for longevity
• Prepared for or with integrated communication
Smart Network

- Utility-grade, reliable communication
- Maintenance free or low maintenance
- Able to reach hard spots
- Built for battery operation
- Integrated communication where possible
- Real time where necessary, near real time where sufficient
Digital Solutions

• The power lies in combining multiple data sources
• User-friendly interfaces
• Real time, near real time and frequent data can be combined to assist in decision making
• Hosting allows for lower maintenance in IT
Solving water challenges with Smart Water solutions…
Measure smarter

Communicate better

Analyze easier

Improve revenue

Increase efficiency
Examples of implementations

Thames Water **smart network** reduces water consumption by **13%**
United Kingdom

**Smart network** saves **$260 000** of water losses to Borough of Monaca, PA
United States
Examples of implementations

Digital solution fulfills wastewater collection needs across 2500 pump stations, Netherlands

Digital solution at Milan municipality finds and fixes previously undetected leaks, Italy
Let’s talk about Smart Water

At Xylem, we’re leading the water industry’s migration to smart infrastructure...

Through strategic acquisitions and innovations centered on energy management and process optimization, Xylem has established itself as a leading provider of smart water solutions that address the industry’s most persistent challenges.

...and we’re committed to guiding water managers through this transition.

Xylem’s latest contribution to the global water dialogue is ‘The Smarter Water Manager - Smart Water Solutions for a Resilient Water Future’ – a tool to educate and support water managers in the transition to smart water.
Xylem Overview

Revenue
$4.5 Billion*

Employees
16,000

Countries
150

Revenue by Geography
- United States 46%
- Western Europe 28%
- Emerging Markets 20%
- Rest of the World 6%

Revenue by End Market
- Public Utility 46%
- Industrial 37%
- Commercial 11%
- Residential 6%
Sensus’ Top 10 numbers

Sensus is a global leader in innovative technology solutions that enable intelligent use and conservation of critical energy and water resources.

400 million messages delivered each day
80 million meters
$91 million investment in R&D
2000+ communities covered by a FlexNet system
170 years of solving challenges for the utilities industry
14,000 customers
6 Continents
Offering global solutions on
37 million smartpoints
576+ customers

Sensus is smarter, talk to us about a tailor-made solution.

www.sensus.com
Vielen Dank
# Discover Xylem Smart Water & Wastewater Solution Map

<table>
<thead>
<tr>
<th>Water manager daily challenges</th>
<th>Xylem's solution</th>
<th>Monitor</th>
<th>Treat</th>
<th>Transport</th>
<th>Decide</th>
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</thead>
<tbody>
<tr>
<td>Ecosystem monitoring</td>
<td>Remote sensor solutions to monitor and report on a variety of water resource parameters</td>
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<td>Remote operations management</td>
<td>1-way and 2-way communications platforms to deliver real-time operations management</td>
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<td>Preventative and predictive maintenance</td>
<td>Connected equipment and maintenance solutions to reduce downtime and failures of critical equipment</td>
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<td>Treatment process optimization</td>
<td>Water quality sensors combined with advanced algorithms to optimize the treatment processes</td>
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<td>Treated water and wastewater quality monitoring</td>
<td>Comprehensive real-time water monitoring and reporting solutions to support regulatory compliance</td>
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<td>Advanced water and wastewater treatment</td>
<td>A broad range of reliable treatment solutions including disinfection, oxidation, filtration, and biological treatment</td>
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<td>Wastewater and stormwater reuse</td>
<td>Integrated treatment to enable potable and non-potable reuse of wastewater and stormwater</td>
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<td>Maximize equipment efficiency</td>
<td>Intelligent pumps and mixing equipment adapts to conditions for maximum reliability and operations efficiency</td>
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<td>Stormwater management and flood relief</td>
<td>Comprehensive range of dewatering solutions for all stormwater and wastewater flood events</td>
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<td>Combined sewer overflow management</td>
<td>Intelligent equipment and real-time analytics to prepare for and prevent sewage and stormwater overflows</td>
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<td>Reduce non-revenue water</td>
<td>In-situ and algorithmic solutions to identify, monitor, and address real and apparent water losses</td>
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<td>Water and wastewater network management</td>
<td>In-situ and algorithmic solutions provide monitoring of network pressure, failures, and overall asset condition</td>
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<tr>
<td>Meter and billing management</td>
<td>Smart metering solutions to improve billing accuracy and enhance customer service</td>
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