

# What is a Smart Water Network?



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# WHAT IS A SMART NETWORK

**“Smart” is a useful adjective. Who doesn’t want to be smart? But what does it mean? As “dumb” is the opposite of smart, this helps with the definition.**

## ANALOGUE NETWORKS

A traditional network is analogue and manual.

- Analogue sensors are used to measure. These include listening sticks, pressure gauges, litmus paper, etc.
- Data is recorded by hand and physically brought back to a central point
- Calculations, to design a network or diagnose an issue, are performed on paper on an occasional basis
- Installation and operation is performed manually
- Maintenance is performed on the basis of time and/or on failure



## ANALOGUE TO DIGITAL

The transition from “analogue to digital” improved accuracy and efficiency.

- Sensors became digital and could be moved around
- Sensors could collect and store data which could be downloaded to a computer on-site and more recently the data could be transferred to a central point without having to be brought back physically
- Calculations are performed by computers bringing a higher level of reliability, accuracy and processing power. However calculations are still only performed on an occasional basis
- Installation and operation is still performed manually
- Maintenance is still performed on the basis of time and/or on failure

## DIGITAL TO SMART

We are now experiencing the transition from “digital” to “smart”. Smart means three things: wireless communications, data analytics, and remote control. Mobile communications are nearly ubiquitous. Data processing and storage is cheap, secure, and scalable, with high levels of availability thanks to the Cloud. Network assets can be controlled through actuation without the need to visit site. These three things are revolutionising networks.

- Digital sensors automatically return accurate data to a central point reliably when it is needed
- Calculations, to design a network or diagnose an issue, are performed whenever they are required
- Much greater levels of actionable insight can be derived from the data
- Maintenance is performed on the basis of condition inferred from the data



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## A WELL TRODDEN PATH

The water sector isn't the first to go on a journey from analogue to smart. It has already happened in telecommunications (transport services like TCP, UDP, etc.), finance (payment processing systems like ACH, SWIFT, etc.) and electricity. The US Department of Energy identifies 5 components of a smart grid:

- 1 Integrated COMMUNICATIONS**, connecting components to open architecture for real-time information and control, allowing every part of the grid to both 'talk' and 'listen'
- 2 SENSING** and measurement technologies, to support faster and more accurate response such as remote monitoring, time-of-use pricing and demand-side management
- 3 Advanced COMPONENTS**, to apply the latest research in superconductivity, storage, power electronics and diagnostics
- 4 Advanced CONTROL** methods, to monitor essential components, enabling rapid diagnosis and precise solutions appropriate to any event
- 5 Improved interfaces and DECISION SUPPORT**, to amplify human decision-making, transforming grid



*A Wireless powerline sensor hangs from an overhead power line and sends measurements to a data collection system. Overhead power line monitoring helps distribution system operators provide reliable service at optimised cost.*

## i2O'S SOLUTIONS

i2O's smart water network solutions consist of robust and enduringly accurate loggers, cloud-based data analytics software, and controllers. They offer the most comprehensive integrated set of smart water network solutions. More than 100 clients in more than 25 countries use them already. They deliver our clients significant business benefits.

## BUSINESS BENEFITS



**REDUCED LEAKAGE  
AND BURST  
FREQUENCY**



**INCREASED  
INFRASTRUCTURE  
LIFETIME**



**IMPROVED  
CUSTOMER  
SERVICE**



**REDUCED  
ENERGY  
CONSUMPTION**

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