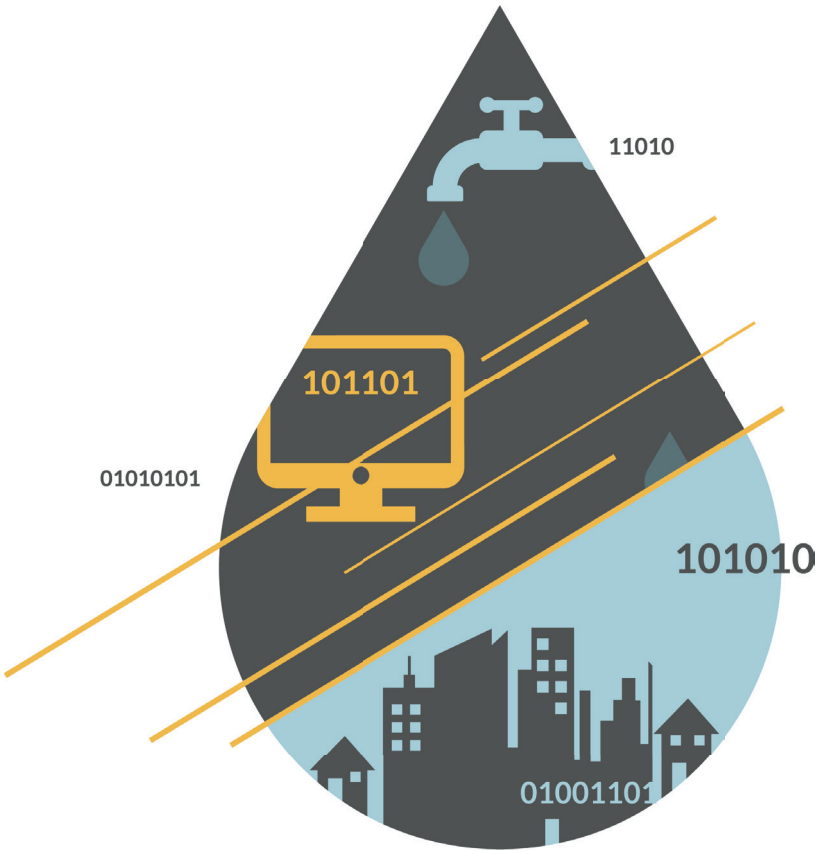
MACS
Energy & Water

DIGITAL INNOVATION FOR EXCELLENCE IN WATER SERVICES

Introducing wSmart: The application for optimization and management of water utilities



Digital Water Transformation

Challenges

The constant increase of economic and environmental regulations, demands, and complexity present unprecedented challenges for infrastructure projects. Analogic solutions are no longer sufficient to improve and optimize operations and costs. The situation is no different for water utilities.

The use of digital technologies has become essential, offering almost unlimited potential to transform the world's water systems, making utilities more resilient, innovative, and by extension building a stronger, ecological, sustainable, and economically feasible foundation for the future.

Digitalization and automation of water services are inevitable and will create great opportunities for utilities ready to embrace them.

Smart Solutions

MACS Energy & Water is ready to support its clients with consultancy and solutions in the digital water transformation.

WaterSmart **(wSmart)** is an award winner[1] state-of-the-art web-based software designed to support water professionals in the conception of networks, management, and operations of water supply systems. The application is modular, comprising network optimization and network management modules. As the software developer, MACS can adapt WaterSmart to the specific needs of clients, and we have the expertise and experience to support them in their digitalization and automation process.

WaterSmart Network Optimization (WSNO) is a novel water distribution network assessment tool for rapid prototyping and identification of technically and economically optimal water network designs. The application is a multi-language expert system, which provides consultants and practitioners in the utility sector the possibility to easily simulate network performance and test different optimization strategies.

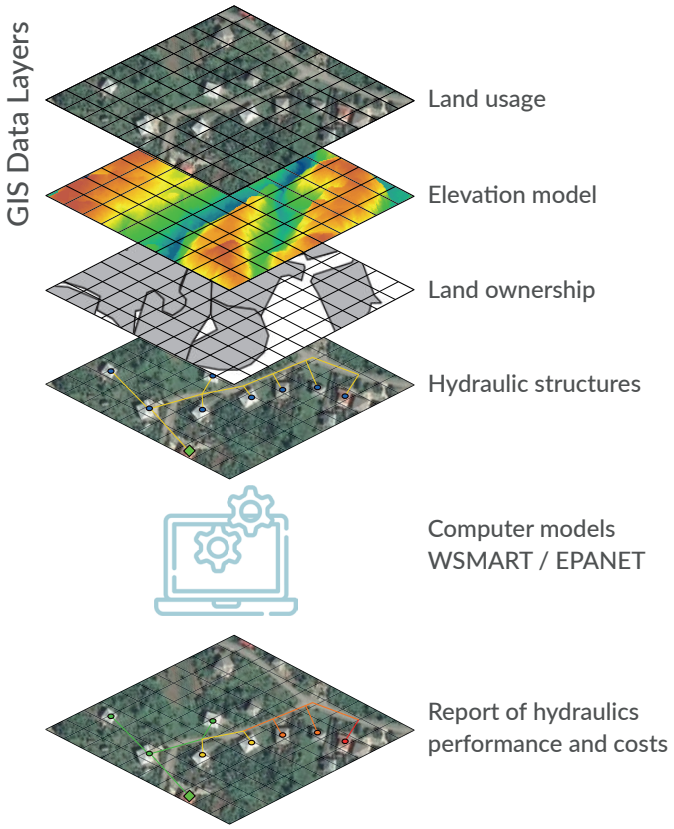
WaterSmart Network Administration (WSNA) is an intelligent, flexible, and customizable system for specialized control, data centralization, and management of water and sewage companies. This application is based on solid database architecture that provides a secure and reliable modular online administration system. In a single application, the user manages real-time data of customers, operations, and warehouse inventory.

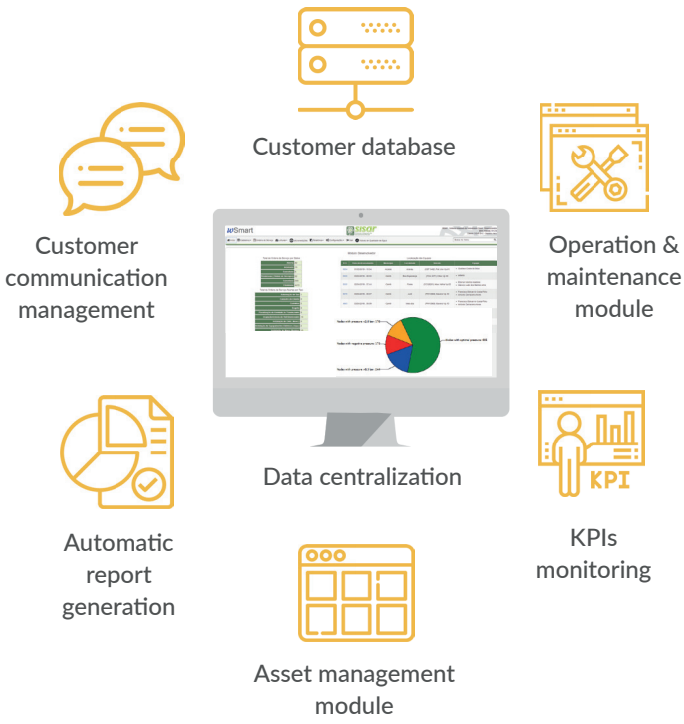
[1] Seal of Excellence Certificate delivered by the European Commission, EU Framework Programme for Research and Innovation 2014-2020.

Network Optimization

The Network Optimization module (WSNO) features a simple user-friendly interface, a broad range of automated data generation functionalities, and the possibility to integrate any specific GIS data. The user designs the network over an online interactive map. There, hydraulic elements can be added, configured, and automatically receive georeferenced information, such as coordinates and elevation. To facilitate the design process, the user can also select different map layers as background, like topography, land ownership, and forest boundaries maps.

Another great feature of the software is the possibility to model and evaluate network performance, providing relevant information about water pressure, flow, velocity, and quality in the entire system. Technicians can easily evaluate the impacts of even slight changes in design, such as adding new house connections or changing pipe diameters. The WSNO hydraulic model is based on EPANET libraries, a long-term reference algorithm applied in water supply systems modeling worldwide.





Network Administration

The Network Administration module consists of an online tailor-made management information system. The main concept relies on the centralization of all relevant data for water utility administration, control, and operation under a common database and software.
The system is user friendly and enables quick and reliable data visualization, analysis, and automatic generation of regulatory reports. The user can also customize dashboards with relevant information as KPIs. WSNA can also be used to directly integrate and feed data to the companies' websites.

Highly customizable, WSNA by default consists of:

- Customer database module
- Operation and maintenance module
- Key performance indicators (KPIs) monitoring
- Asset management module (warehouse)
- Automatic reporting
- Customer communication module

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