AVEVA software solutions help the City of Barcelona enhance the lives of residents, workability of businesses and sustainability of the environment, making it a perfect example of today's smart city.

City of Barcelona

INDUSTRY
Infrastructure

Goals

- To achieve a more sustainable and livable city by improving the quality of life of its citizens.
- To ensure that all available resources function and are optimized efficiently.

Challenges

- A solution was needed to enhance the availability and functionality of the city's resources such as elevators, escalators, public fountains, parks and gardens.
- Barcelona needed to effectively manage the city's water consumption for both irrigation and public use.
- The city needed to implement a scalable system that enables the integration of new city processes and facilities.

AVEVA Solution

- System Platform
- InTouch HMI

Results

- The city has optimized water consumption via a communications infrastructure built upon the existing irrigation network via a customized SCADA system.
- System Platform provides a modular structure composed of standardized communication equipment and protocols ensuring connectivity between existing and future systems, as well as scalability to adapt to the needs of the city.
- The open platform allows seamless management in real-time of tailored-made applications via a centralized control system.

AVEVA™

The City of Barcelona Achieves Smart City Operations Using System Platform to Effectively Manage City Resources

BARCELONA, Spain – Managing the infrastructure of a major city that is home to more than 1.6 million residents and boasts a thriving tourism market of over 8 million visitors annually, requires the efficient management of everyday services such as water, landscape, elevators, escalators and wastewater.

The more effectively these services are managed, the greater the contribution to the health and well-being of all who use them. To address the critical infrastructure challenges faced by the City of Barcelona and its complex network of public works, software from AVEVA was implemented to achieve an overall efficient operation of all municipal services.

Creating A Sustainable Infrastructure Management Platform

The city of Barcelona is an ideal global example of sustainable urban development and administration using technology to successfully manage public services and activities throughout the city.

City planners and administrators teamed up with Logitek Wonderware Spain to ensure that all available resources were optimized through implementation of System Platform. Remote monitoring and control of equipment and services such as building elevators and escalators, public fountains, and irrigation for parks and gardens, were included in the technology blueprint for the city.

"The remote monitoring of infrastructure processes created using AVEVA software is key to our success. The integrated software solutions enable our team to ensure energy use and supply of water is optimized to coincide with public demand. In addition, it manages the delivery of the right amount of water for irrigation based on current weather conditions and the needs of the plant."

**Cristina Vila Rutllant,
general manager of Barcilona de l'Aigua SA,
Barcelona City Council**

With the creation of Barcelona Cicle de l'Aigua SA, (BCASA) by the Barcelona City Council in 2014, the management of water use for the city and surrounding neighborhoods is now consolidated in one municipal department for efficient and successful management of the city's critical water supply.

For the BCASA Parks I Jardins municipal division, AVEVA technology plays a key role in the successful operation of the city's parks and recreation areas. Its "smart" water system uses sensors in each location to gather information on humidity, salinity, temperature, and wind.

This data is automatically uploaded to the main control room and managed by System Platform where it is monitored to automatically regulate the amount of water used in each location.

Using System Platform, the City of Barcelona benefits from a single, scalable software platform that functions as an operating system for infrastructure applications. System Platform provides an efficient and flexible method of developing, deploying and maintaining the software applications used to manage and improve critical operation of all city functions.

Featuring an object-oriented environment, System Platform allows city planners and engineers to rapidly create and deploy new systems, as well as easily modify current applications and deploy changes to existing systems when necessary.

"The Barcelona irrigation system is a remote-controlled process based on System Platform, which integrates different existing systems located throughout the city. Based on the information gathered, we create a model to measure soil moisture which allows us to provide intelligence to the remote-control platform, ensuring the right amount of water is delivered at the right time, and only when necessary."

Ruben Rueda,
application consultant at Logitek and Wonderware expert

This platform integrates all city systems that require supervision and remote control in a SCADA system. The water control system managed by BCASA Parks I Jardins is among the main functions, with teams on the ground collecting and managing data via computers, smartphones and tablets.

By providing common services such as configuration, deployment, communication, security, data connectivity, as well as people collaboration, System Platform allows city engineers to build a single, unified "Plant Model" that logically represents overall processes, physical equipment and industrial assets, even legacy systems. This capability makes the design and maintenance of these systems more flexible and efficient.

The Plant Model also gives essential context to data, greatly assisting with diagnostics and troubleshooting, as well as providing valuable system documentation throughout the system lifecycle.

Managing a Valuable Resource Through Visualization

Barcilona de l'Aigua S.A. is a municipal company that manages the water usage for the city of Barcelona. These activities include the management, maintenance and planning of the sewage network, ground water, city fountains, coastline, and drinking water. The company manages the water usage of different municipal services, as well as the distribution of water to surrounding homes.

"As we know, water is a valuable and scarce resource. The implementation of smart systems enables us to improve the management of different systems deployed in the city to optimize water consumption and achieve a more sustainable city."

Cristina Vila Rutllant,
general manager of Barcilona de l'Aigua SA,
Barcelona City Council

The Smart System remotely manages irrigation of the city's greenbelt areas via AVEVA technology. Water consumption is optimized and controlled via a communications infrastructure that is built upon the existing irrigation network, which integrates a customized SCADA system for the city using InTouch Human Machine Interface (HMI) software.

To accurately display overall operations in a user-friendly, actionable format, InTouch HMI provides an open and extensible supervisory HMI and SCADA solution that enables Barcelona to quickly create standardized, reusable visualization applications and deploy them across an entire enterprise.

Improving real-time visibility into processes, InTouch HMI greatly enhances operator effectiveness and increases control of city operations to simplify and enforce standardization and change management.

City workers are now able to monitor multiple public operations from a single control room, by taking advantage of new connectivity opportunities provided by Systems Platform and visualization offered by InTouch HMI.

Centralized Control of Real-Time Information

The centralized control of all infrastructure systems and real-time information management was successfully implemented by Logitek, Wonderware Spain.

"By leveraging Logitek know-how and AVEVA technology, the city's diverse management systems have been unified into a single platform that operates all greenbelt areas and supports existing communication systems. This is also an open platform that allows for seamless process management that is tailored to the requirements of the Barcelona City Council."

Fco. Jose Hernandez Astorga,
head of Coordination and Activity for
Urban parks, Gardens and Environment
with the Barcelona City Council

AVEVA operates like a central nervous system, receiving and transmitting information by means of a strategically distributed network of sensors located throughout the city. This peripheral nervous system monitors the smart city's operations and ensures efficient resource management.

"For the last year, Logitek Wonderware Spain has collaborated with various local integrators which specialize in technology installations at large municipal entities such as airports or train stations. This enabled us to learn and understand the critical needs of these users. With the knowledge acquired, we were able to develop specific objects for the AVEVA software to enhance the city's overall user experience."

Jordi Rey,
Management Director of Logitek Wonderware Spain

AVEVA Helps Barcelona Maintain Status as Sustainable Smart City

With the increasing majority of people living in cities, urbanization poses significant short-term and long-term challenges to governments and municipalities, driving the need for smarter, and more digitally-managed infrastructure.

A smart city, such as Barcelona, manages its digital infrastructure and data to enhance livability for its residents, workability for its businesses and sustainability for the environment. By providing the ideal technology platform for smart cities, AVEVA software enables Barcelona to access real-time, critical data for better, faster and more efficient decision making.

As a Lead Partner of the Smart Cities Council and a Corporate Member of the New Cities Foundation, AVEVA is dedicated to providing real-time SCADA and operations management software designed to unify people, information and processes for effective management of the smart city of Barcelona and cities of the future.

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