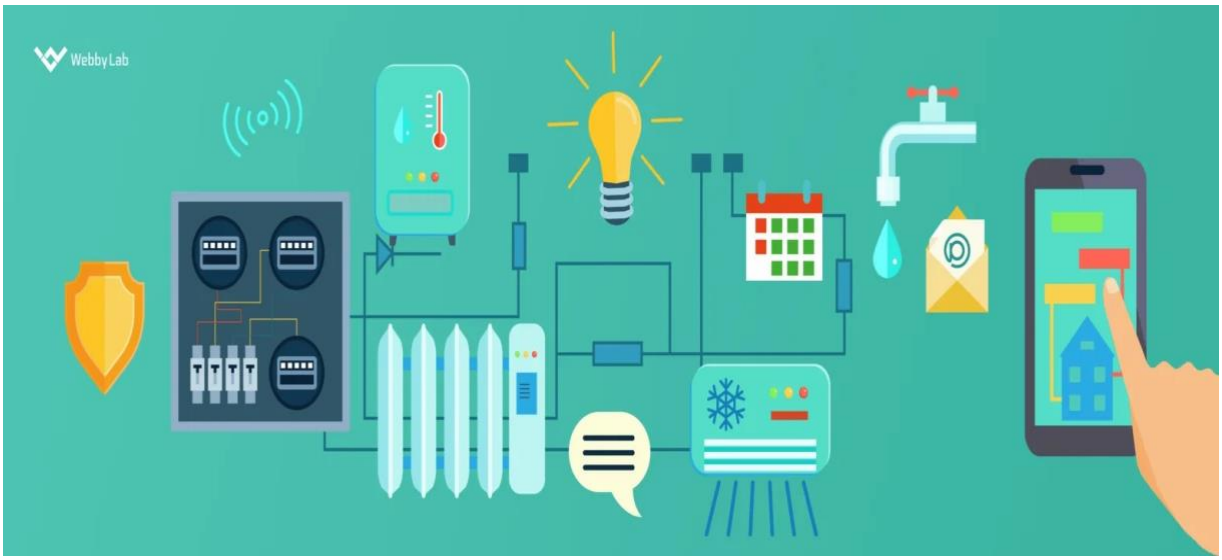
IoT-based Water Management System



Access to water seems to be ever-present. Yet, according to WWF, two-thirds of the world's population may experience water scarcity by 2025. Growing population and climate change are the primary reasons for this, yet there are other, no less significant ones. Overloaded water infrastructure, pollution, and improper water management add to this unfavorable scenario.

If there are means to cut these issues, a smart water management system using IoT seems the most viable solution. Whether a consumer, governmental structure, or agricultural business — every individual and industry equally benefit from this.

Companies worldwide increasingly invest in smart water management, pushing this market from $14.3 billion in 2021 to $53.6 billion in 2031. Businesses leverage IoT sensors and IoT devices to monitor their water distribution networks, facilitating the preservation of resources.

Today, WebbyLab will go into IoT-based water management systems and its benefits in greater detail. We'll show the real-life applications of such systems, using our projects like the 2Smart Standalone automation platform as an example.

What is IoT Smart Water Management?

IoT-based water management system is a process of planning, allocating, and monitoring water resources and maintaining related equipment like pipes and pumps through IoT hardware and software.

IoT-enabled water management systems use sensors, controllers, meters, and other devices connected to mobile, web apps, and data processing and analysis tools. All this creates a platform for efficient water supply management, freshwater quality checking, pollution detection, and more.

How does a smart water management system work? IoT devices and sensors attached to the pipes and pumps collect real-time data on water temperature, level, flow, etc. Then, they transmit this data via the Internet to a cloud server for further processing and analysis. The insights obtained contribute to proper water resources management and equipment maintenance.

Real-Time Water Consumption Analysis

IoT water management systems leverage numerous sensors that collect real-time insights on how resources are used. These devices transmit the gathered data to the user's application online. This information empowers analysis of consumption patterns and encourages more rational water consumption.

Reduced Equipment Maintenance Expenses

The water industry involves various equipment and machinery that has to be maintained. By attaching IoT devices to storage tanks, pipes, pumps, treatment plants, and other assets, companies can reduce maintenance expenses with constant monitoring and automation techniques.

Transparency and Better Communication Among Stakeholders

IoT in the water supply chain will make all processes transparent by collecting real-time information. All stakeholders can view that data, mitigating misunderstandings, improving performance, and making better business decisions.

Remote Monitoring

Industrial IoT monitoring systems connected to the water supply chain allow stakeholders to manage their equipment and water networks remotely. Like WebbyLab's 2Smart Standalone, combined with the 2Smart Cloud platform, enables monitoring the water system from anywhere there is the Internet

Automation and Optimized Human Resources Use

Internet of Things water management solutions allow businesses to automate numerous procedures that require manual intervention. The scope of automated processes varies by industry, but some may include automatic water supply or dynamic pricing based on water resources used.

Reduced Risks

IoT devices for water management systems allow for data collection and analysis, which enables businesses to forecast issues and respond to them instantly. For example, they can use IoT systems to check water quality and identify contamination before it becomes hazardous.

IoT Solutions in Water Management Systems

There are various use cases of IoT water management solutions. Let's consider the main ones.

Smart Irrigation

These IoT-based systems enable on-demand irrigation. They leverage sensors that check soil temperature and humidity, analyze weather forecasts, consider the watering calendar, and suggest the perfect irrigation strategy based on the collected data. Our 2Smart Standalone platform supports smart irrigation features, achieving the best plant health and yields.

Water System Integrity

Other solutions in IoT smart water management include sensors that track damage in pipes and other assets. They help prevent leakages and water resource waste. There are plenty of such devices on the market, and Strips Drip by Sensative water leak and temperature sensor is one of them.

Smart Water Monitoring

Smart water monitoring systems include the water system integrity and irrigation features mentioned above. They also involve sensors for determining water quality, telemetry devices, tools for tracking rainwater, etc. All this enables water monitoring and subsequent effective decision-making based on the collected data. Our 2Smart Standalone solution is an example of such a system, as its architecture allows for connecting various water monitoring sensors via any protocol.

Smart Water Management

A smart water management system using IoT technology includes various water monitoring devices and sensors combined with advanced data analytics tools. These can be smart metering, user dashboards, and custom solutions for water management automation. For example, 2Smart Standalone enables the creation of limitless automation scenarios like smart irrigation, leakage detection, or support of the required water condition parameters.

Use Cases of Smart Water Management Systems Using IoT

Applying IoT water management solutions in many sectors – from agriculture to urban management. Let's look at some real-life examples of these technologies.

Smart Irrigation of City Parks

Water waste and overloaded water supply networks are the main challenges of the Internet of Things water management systems that significantly affect the city's budget. Still, the Internet of Things helps tackle those issues.

If we take smart watering of parks as an example, IoT-enabled solutions monitor soil state, weather forecasts, and current weather conditions to suggest the optimal irrigation scheme. That has been successfully implemented in the San Isidro park in Lima, Peru.

Monitoring the Quality of River Water

Ericsson and AT&T have partnered to create a solution to monitor water quality in the Chattahoochee River in Atlanta, Georgia, which is the source of drinking water for about four million people. They used IoT sensors to determine the water's temperature, thermometry, and turbidity.

Smart Dam Monitoring

ThingsLog has offered an IoT solution for monitoring dams in Bulgaria. It helps to observe the water level in each section of the dam, and in case of deviation from normal indicators, the system sends an alert

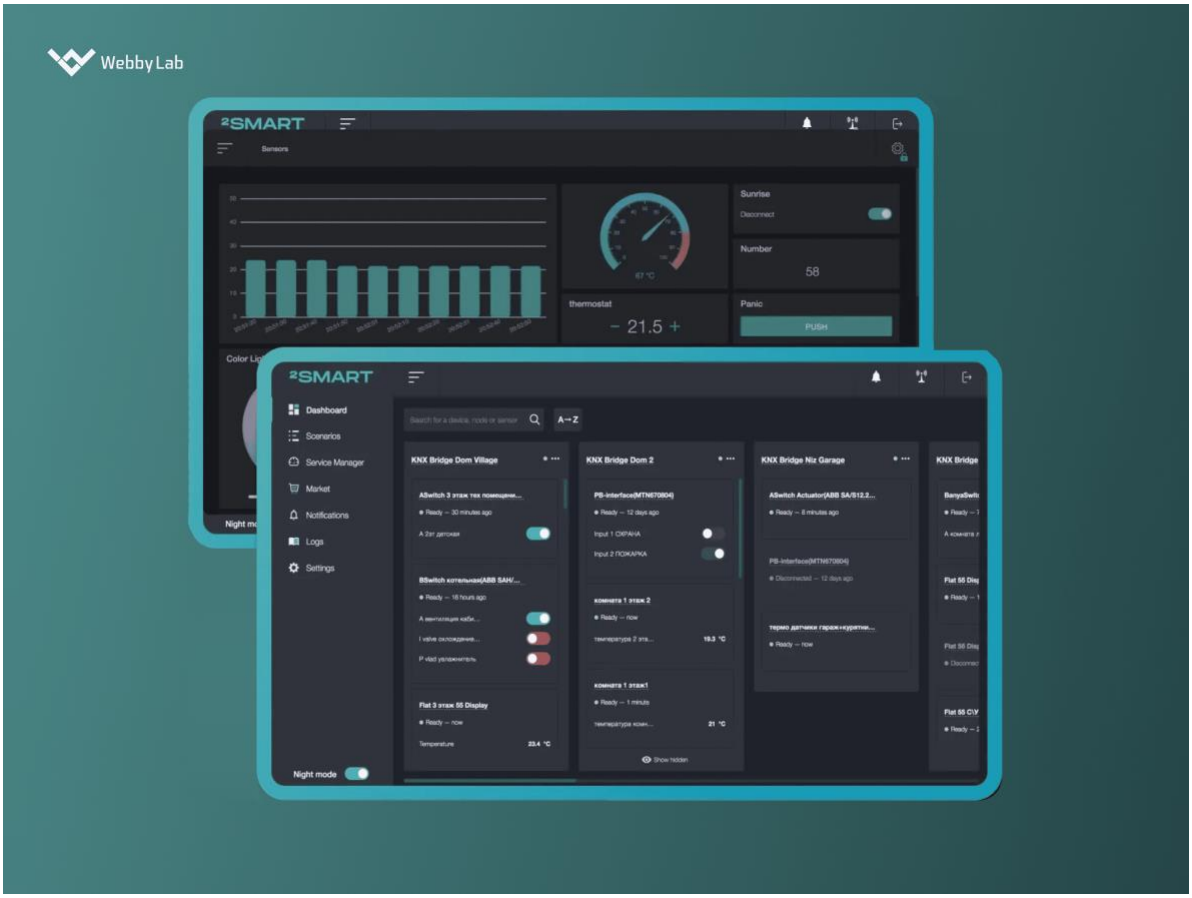
WebbyLab Can Help with IoT-based Smart Water Management Solutions

WebbyLab has been building IoT apps and devices since 2011. During this time, we delivered many IoT-based water management systems like 2Smart Standalone, HVAC projects like SmartHeat, and energy management platforms like MyBox. All of this with the help of the Internet of Things.

Our company can handle smart water management using IoT project of any complexity. We strictly follow our client's requirements to achieve the best results.

Using 2Smart Standalone for Smart Water Management

Our 2Smart Standalone is an all-in-one home and industrial automation platform. You can use it to perform various tasks in IoT-enabled smart water management, owing to its flexible architecture that enables connecting any IoT sensors and devices.



Connecting various IoT devices and sensors to the 2Smart Standalone platform.

This platform supports numerous custom automation scenarios and models, some of which may include the following:

- Monitoring water quality
- Supervising the infrastructure and equipment
- Sending notifications if the system parameters are outside the configured limits, e.g., deteriorated water quality, leakage detection
- Enabling smart irrigation based on soil state, weather forecast, and irrigation calendar
- Maintaining the necessary parameters of the water's state in a habitable artificial reservoir

On top of that, 2Smart Standalone is a scalable solution, so it may help to maintain one or multiple sites simultaneously. The system operator, in turn, can effortlessly view and manage necessary parameters through the configurable dashboard. All historical data is stored in the database, which an operator can access through the Grafana web app.

You can also find more IoT projects in our portfolio.