

Keeping Operations Flowing Smoothly

How American Water upgraded their SCADA system to improve operating performance, safety, and resiliency



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WATER UTILITY MANAGEMENT

Modernizing Operations at American Water

We helped American Water upgrade its SCADA system to meet ISA 101 and high-performance HMI standards.

American Water, the largest U.S. public utility that is publicly traded, provides water and wastewater services for more than 14 million people in 24 states. In 2022, the decision was made to convert its outdated SCADA system into a modern system that meets ISA 101 and high-performance HMI standards.

Specifically, American Water needed to help improve the ability of its operators to respond to abnormal events, enable centralized access to data from multiple sites, and integrate data from back-end systems.

Challenge 1: Inconsistent HMI/SCADA standards at multiple sites. The hundreds of water and wastewater locations that American Water maintains across the United States had been using disparate platforms— with unique HMI/SCADA system depictions and design symbology for operator interfaces — to manage the data for their specific sites.

As a result, in the event of heavy rainfall or other abnormal weather covering a wide area, an operator might receive multiple alarms with different symbols. Without prior knowledge of the system used by the other sites, it was difficult for the operator to quickly assess the situation and put the data into context.

Challenge 2: Limited access to data across systems. Water utilities use their SCADA systems to collect a wide range of data for making critical decisions about issues such as leaks, overflows, and chemical imbalances. In most cases, that data is transmitted to a centralized location where it is monitored and analyzed.

At American Water, each site or region had historically maintained data for its specific location, with no access to that data available at the enterprise level. For American Water to achieve its vision of digital transformation, it was going to

Challenges

- American Water serves 14 million people in 24 states
- Needed to improve ability of operators to respond to abnormal events
- Wanted to centralize data collection and management

Solution

- Single SCADA system across all sites
- Central repository for all data collected at sites, with remote (web) access
- Connection to other enterprise systems

Results

- Enables critical predictive intelligence about assets, cost analysis for processes across systems
- Greater resiliency through redundancy and distributed architecture
- Access to data for more efficient decision-making
- Web connectivity by any device across the enterprise with a web browser, saving time and providing the adaptability and cost-effectiveness

need to have all of its data sets in one central platform to facilitate informed decision-making for a wide range of operations.

Challenge 3: Bridge the gap to external systems. In addition to centralized access to operational data from disparate locations, American Water operators needed access to operational data from other enterprise systems (e.g., the utility's GIS and asset management system) to inform their decisions.

Ignition: The new SCADA

To achieve its threefold objectives across its national network of facilities, American Water called on systems integrators InflexionPoint (formerly Automated Control Concepts) and Flexware Innovations. The solution created for American Water included an Ignition ecosystem for SCADA/HMI standards, a central place to view all data across American Water sites, and an integration layer that enables the utility to pull data from other systems.

Ignition software from Inductive Automation is an industrial application platform with tools for building HMI, SCADA, and Industrial Internet of Things (IIoT) solutions. Perspective, the mobile-first visualization tool module for the Ignition platform, made it possible for the project team to design a system utilizing a consistent SCADA/HMI platform standard across all American Water sites so that every site in the network can work with the same codes and symbology.

With its considerable integration capabilities, Ignition enabled the secure migration of operational data from local American Water sites to an enterprise portal that was built to serve as a centralized location for viewing data from all sites, as well as asset information from the internal GIS system. The new screens allow users from across the network to view key metrics and react quickly to critical alarms.

Helping a water utility do more

The Ignition project, which received a 2022 Ignition Firebrand Award from Inductive Automation, represents the first and largest-scale standardization of American Water's enterprise architecture and operational technology.

"Our previous system was becoming hard to maintain and find support for," says Wade Amos, director of operations at Indiana American Water, an American Water subsidiary that serves approximately 1.4 million customers. "Moving to Ignition has opened a world of possibilities — for maintenance, support, and expansion."

While American Water is currently in the early stages of transferring data from new and existing deployments to its new enterprise portal, it expects the new solution will encourage better decision-making and seamless adaptation to changes as the utility evolves. "The new system enables more access to data and more efficient decision-making for workers in operations, water quality, and engineering,"



"The new SCADA system enables more access to data and more efficient decision-making."

Bob Raffaele
Sr Dir Enterprise Architecture
American Water

says Bob Raffaele, senior director of enterprise architecture and operational technology at American Water. "We plan to deliver consistency across all our water and wastewater plants and a consolidated view for operations."

And, because Ignition is a web-deployed solution, it can be launched to any device across the enterprise with a web browser, saving time and providing the adaptability and cost-effectiveness American Water needs.

The utility is confident that the Ignition solution will enable critical predictive intelligence about assets, cost analysis for processes across systems, and much more additional functionality as the system evolves.

As the convergence of IT and OT continues at utilities, solutions like Ignition promise to help bridge the gap by enabling an end-to-end view of assets and resources across the network to improve efficiency, enhance workflows, and maintain a competitive edge. ■