ROZETTA TECHNOLOGY

Real-time analytics save precious water resources

Water utility companies have a responsibility to optimise water use and achieve the perfect balance between water supply and consumption. One New South Wales-based water utility, which provides drinking water, wastewater, recycled water, and storm water to approximately 600,000 residents, sought a solution to more effectively manage its water supply network.

The challenge

The water utility wanted a better way to proactively detect water leakage, bursts, and other major incidents. This would help the organisation respond faster to any asset that needed attention, spread across the almost 7,000 square kilometres it serves, ultimately leading to the introduction of a preventative maintenance program.

Solution design

The water utility teamed up with RoZetta Technology on an innovative solution for a cloud-based data and analytics platform leveraging Internet of Things (IoT) sensor data to provide a near-real-time monitoring dashboard. The dashboard aimed to easily present early leakage and major burst detection alerts to the water utility's engineers.

Given the scarcity of known historical leakage and burst events, the machine learning processing model had to be trained and developed using a limited number of occurrences. This isn't usually ideal; the accuracy and predictability of the artificial intelligence (AI) model is critical to the success of the project and traditionally depends on having as much data as possible to learn from.

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RoZetta Technology drew on decades of experience to deliver a fit-for-purpose analytics and monitoring platform in just a few weeks. It used highly specialised toolsets from AWS, covering everything from data aggregation and analytics to a self-service portal with real-time monitoring capability. This has provided a solid foundation for the water utility as it expands its IoT sensor fleet and cloud presence, in addition to ingesting data from its existing SCADA sensor network. As the platform receives more sensor data, the solution will continue to learn and improve its accuracy by rapidly retraining models over time.

Impact

The RoZetta Technology solution lets the water utility detect leakage and breakage in the network proactively, based on pre-set targets. This has significantly reduced the time it takes to identify issues, which previously often relied on consumers alerting the water utility of an issue. The organisation can now conduct preventative maintenance, while dramatically reducing breakage and leakage issues. Before implementing this type of monitoring solution, water utilities typically experienced between 7 and 15 per cent loss of water through infrastructure leaks. The RoZetta Technology solution forecasts this will reduce by more than 30 per cent, and will reduce even further if a targeted preventative maintenance program is set up and supported by an IoT monitoring network with comprehensive coverage.

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Before implementing this solution, identifying issues across the water supply network in near-real time was extremely difficult for the NSW-based water utility. Now, with this capability in place, the water utility has the foundation to continue to expand its IoT sensor fleet to more precisely identify the location of a break and, longer-term, augment the platform with failure prediction to facilitate preventative maintenance before a major break occurs.

Being able to identify incidents before they occur, and quickly locating incidents when they do, will help reduce water leakage, reduce treatment costs, improve customer experience and, ultimately, more intelligently manage this scarce resource.

The entire end-to-end solution was completed within eight weeks from design to delivery. Using AWS means it is secure by design and complies with regulatory requirements. Serverless technology offers dynamic scale and lower costs, while the ability to quickly retrain the dataset offers confidence in the solution's ongoing effectiveness. The solution lets the water utility take true action, creating a more sustainable water network to protect one of the nation's most precious assets.

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