SOFTWARE

Articles in this section look at analytical and reporting software, a safety app for workers developed in Victoria, machine learning to predict pipe failures, and Australian water modelling being used in India, as well as new products.

Software enables more efficient operations

by Derek Vogelsang

The cost of water for customers in Australia has risen on average by at least 15% in the past year alone. This, combined with rising living costs more generally, and the pressure to maintain positive customer sentiment and meet regulatory requirements, is placing significant pressure on utilities to reduce the cost of water.

Water companies are looking at ways to reduce operating costs, so that savings can be passed on to customers. A large part of their focus is on operational efficiency across their networks.

Developing more operationally efficient water networks will ensure economic benefits, as well as provide other advantages such as improved network reliability and a reduction in customers impacted by emergency incidents. This enhanced level of service can both meet and exceed ever growing customer expectations.

In response to the situation faced by water utilities, MWH Global has been developing technology to allow more efficient operation of water networks, helping water utilities to significantly reduce their operational expenditure.

The challenge for Adelaide

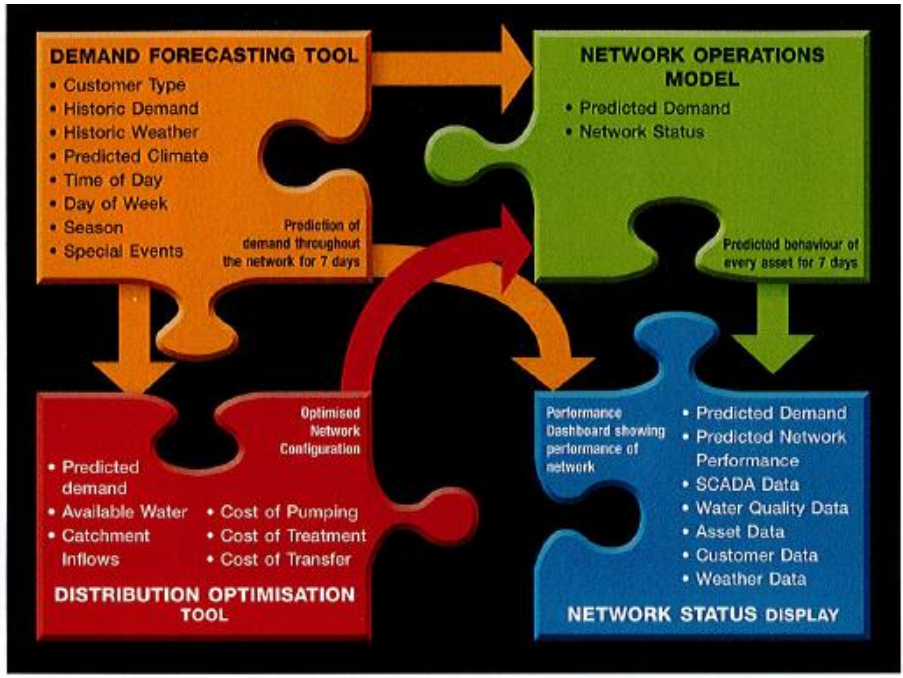
In 2010, SA Water engaged the Waterlink Joint venture, which comprised of MWH Global, Tonkin and Parsons Brinckerhoff, to deliver the interconnection of the Adelaide water supply network.

The outcome of this $403 million investment would improve flexibility and reliability of supply, improve water security during prolonged drought and increase capacity to allow for demand from population growth until 2050.

SA Water required decision support tools to help it make informed choices to get the best out of the new infrastructure and deliver for its customers.

MWH and its business intelligence service, which provides tools and software to drive efficiencies in operations and asset management, were required to design and develop a suite of sophisticated, ground-breaking decision support tools, to enable the optimal operation of the Adelaide water supply network.

MWH has worked closely with SA Water to develop a suite of tools that can deliver operational and predictive analytics,



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ensuring that both current and future maintenance and operations are taken into account.

A Demand Forecasting Tool is capable of calculating demand (how much, where and when) across the entire network at 30-minute intervals, seven days a week. This means that at any point in time, SA Water can generate a demand profile across the network, allowing the organisation to carefully balance supply and demand.

A Distribution Optimisation Tool provides a clear picture of how this demand can best be met – by analysing how much water needs to be supplied to meet demand against the available water (in dams, pumping from the River Murray and the new desalination plant). This tool analyses the cost of different supply options and can generate a 30 day and two-year outlook to map how water can most efficiently be sourced.

A Network Operations Model uses a hydraulic model of the network and connects it to live supervisory control and data acquisition (SCADA) information to predict the performance of every asset in the network. If there is an incident such as a burst water main, the model can track what is happening in real-time as well as predict how other assets will be affected.

A Network Status Display brings all information across the entire network – across asset management, geographic information system, water quality, billing, and meteorology – into a single portal. Water organisations tend to be "siloed" in their information management, so having all of the relevant information together in one place is a valuable capability.

These tools are unique in that they enable real-time operational analytics – what is happening now across the network and how should we respond to it – but also predictive analytics – what will happen in the future. Combined, these tools give SA Water access to a wealth of information not previously available. MWH is currently in the process of putting the tools through user acceptance testing and they will be fully operational by the end of June this year.

This sophisticated technology has the potential to create significant operational efficiencies, in turn delivering customer service improvements and minimising costs. Other benefits likely to be realised include reduction in customers impacted by events, improved water quality event detection, improved reliability and transparency in decision-making, and real-time modelling and response to emergency incidents. Added to this, the depth and breadth of data generated by these tools will make regulatory compliance a much easier task for both regulators and utilities – a win-win for efficient water management. ■

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