Water operators are facing challenges in serving their customers, particularly given the frequency of water crisis and the complexity of distribution system they have to manage. There is a need for a quantum leap to keep up with these challenges and consistently satisfying customers’ needs through an efficient water management, and it is vital to look at how digital solutions can be integrated into the vast and fast-growing water sector.

Automation and Digitalisation of Operations
Currently transitioning from an Operational Command Centre (OCC) to an Intelligent Command Centre (ICC), the Air Selangor’s digitalised operations link and integrate its key strategic asset parameters, namely the water flow and pressure, reservoir level, pump status, as well as the supervisory control and data acquisition (SCADA) capabilities.

The ICC is set to be fully commissioned in 2021. A key feature of the ICC is integration with Online Hydraulic Model, an end-to-end integration system for monitoring, analysing and modelling distribution systems in real-time. It is based on the integration of real-time hydraulic data with hydraulic computer simulation models and statistical prediction tools. This enables Air Selangor to have real-time monitoring control over its assets that are operating around-the-clock to ensure that it can continuously supply clean and safe treated water to its consumers.

THE RISE OF DIGITALISATION IN THE WATER INDUSTRY

The current ICC’s ecosystem will be enhanced with a virtual replica capability, known as Digital Twin, that enables analysis of data and monitoring of systems to head off problems before they even occur, prevent downtime and plan for the future through simulations.

Big Data Analytics as the New Game Changer
For years, Air Selangor relies on manual processes to collect and analyse its data. This approach is no longer adequate as the company is producing data in much higher volume, variety and velocity with newer treatment plants and related technologies, as well as a growing consumer base. To ensure that it can effectively leverage on its vast data, Air Selangor has set up a Data Analytics Centre (DAC) to build enterprise-wide capabilities for Big data analytics.

Air Selangor will be the first water operator in Malaysia to have a full-fledged DAC that supports its end-to-end analytics capabilities for business operations. DAC is established with data engineering, data science, data management and digital specialisms. With DAC, Air Selangor can enhance its operational and performance efficiency through Operations Business Intelligence (OBI) that enables identification of blind spots in operational gaps. The OBI fuels the management to deep dive insights with timely information that expedite decision-making process. Furthermore, various predictive/optimisation analytics and artificial intelligence leveraging on advanced statistics and machine learning on cloud platform will be applied to explore opportunities for cost control, managing risk, improving levels of services, managing revenue and other initiatives in future.

Currently, the DAC capability is being implemented in stages and it is positioned to be Air Selangor’s excellence centre for all data analytics initiatives. Ultimately, through DAC, Air Selangor will embrace big data analytics as the new game changer to steer Air Selangor Strategic Plans and Initiatives Realisation (ASPIRE).

Empowering Consumers with Smart Meter
Another digital solution that empowers both the water operators and consumers is the smart water meter that provides real-time information to better manage water consumption and meter reading for billing purposes. In 2019, Air Selangor has piloted a smart meter programme with the Advanced Metering Infrastructure (AMI) Smart Water Meter in in the Sepang region.

Smart meters use wireless technology to transmit data from meters at any pre-set frequencies so meter readings can be done remotely. Smart meters remove the need of manual and estimated reading for billing. This emerging technology allows consumers to be notified when there is a drastic increase in their water consumption, which can be caused by an unusual usage rate or possible internal leakage, and when their meters were vandalised. These alerts will allow consumers to take immediate action or notify Air Selangor for remediation. The technology also allows the operator to collect and analyse data on its consumers’ water consumption behaviour.

A total of 7,923 AMI meters were installed in the first phase of the pilot programme in Sepang and connected via the cellular Narrowband – Internet of Things (NB-IoT). The second phase of the pilot project will be rolled out in December 2020. Air Selangor will continue to explore and assess new and emerging technologies, as well as its cost benefits before rolling out the programme in full.

The Digital Future of Water
Challenges such as affordability, scarcity, resiliency and quality are already putting substantial pressure on water operators and the communities they serve. Nevertheless, emerging technologies, growing analytics and digital solutions will be a boon for the water industry. Leveraging the potentials of real-time data and analytics capabilities brought by digitalisation will enable companies in the water industry to better serve its consumers.