28 June 2021 (Monday)

4.00pm-5.30pm (SGT) (GMT +8)
Session 1.5 – Smart Water Grid

Session Chair(s): Lucia Cade, South East Water (Australia)

Recent Developments and Applications Of Sensor Networks In UK, Australia And Singapore, and Its Challenges

M. Iqbal. Xylem Water Solutions Singapore Pte Ltd (Singapore)
Presenter is an invited speaker. No executive summary is available

TWINET TM: Operational Real-Time Tool Based On The Hydraulic Model And Sensors Data

F. Figuères, A. Chazerain. SUEZ Water Technology & Solutions (France)

Suez initiated a project founded on the valorisation of pressure measurements and remotely read data through a "live" digital twin of the network, designed to ultimately make informed choices and allow optimization problem solving. The proposed solution allows for the aggregation of the total flows of each virtual sector, which makes it possible to monitor the network in real time and ensure "virtual sectorisation" on more or smaller sectors, as well as on sectors that cannot be isolated for operational reasons, thus avoiding the multiplication of closed flowmeters and/or valves. The first application gave satisfactory results allowing for the reconstitution of the volume delivered to the network and the detection of failures on flow meters, as well as the identification of the proposition of physical losses per sector. These results give a first glimpse of the scope of the application of the solution while a full operational implementation is underway.

Digital Twins For Resilient Water Infrastructure

Z. Wu, R. Kalfarisi, LK. Cheong, SF. Hew, JJ. Wong, G. Teopilus, I. Song, JM. Yip. Bentley Systems, Inc. (United States)

Resilient water infrastructure is essential for achieving sustainable growth of future cities, where digital Twin (DT) technology plays a key role in enhancing the resilience of water systems. DT has been developed and applied in manufacture industry for more than a decade but relatively new for water infrastructure engineering. It is defined as digital replica of a physical system. This paper briefly elaborate the framework of DT for resilient water system management and the digital threads that connect and update both the virtual/digital and physical twins via essential DT technologies, including Artificial Intelligence (AI), AI-enabled 3D modeling and inspection of water infrastructure, optimization-based simulation modeling integrated with data analytics for prediction and anomaly detection and the system analysis to construct a high-fidelity model or DT, which eventually facilitates water infrastructure resilience management.