

KIOS Distinguished Lecture Series



Prof. Dragan Savić, FEng

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Professor, University of Exeter

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Room B108, A. Leventis Building, University of Cyprus

Smart Water Systems – Reality or a Pipe Dream?

LECTURE ABSTRACT

The growing urban population together with other pressures, such as climate change, the ever increasing regulatory burden, the drive for increased efficiency, create serious challenges to the provision of urban infrastructure services, including gas, electricity, transport, water, etc. The proliferation of cyber infrastructure, including sensors of various types, large-scale and widespread data acquisition, increasingly sophisticated modelling tools (including Artificial Intelligence), information and communication technologies (ICT), “Internet of Things” (IoT), and the roll-out of 5G wireless networks promise to enhance city living in the years to come and may lead to the emergence of the so-called ‘smart cities’. As for the urban water, urban drainage and wastewater systems, which are part of the essential city infrastructure, the ultimate goal is to deliver sustainable and resilient (socially, environmentally and financially) water management. This is a complex and difficult goal to achieve considering challenges of non-revenue water, excessive use and abstraction, quality issues and more frequent droughts and natural disasters. Digital (‘cyber’) infrastructure, in combination with the physical infrastructure (i.e., urban water and wastewater networks), should be able to contribute to better water management in cities. This is what is often termed as ‘smart water systems’.

Many utilities have embarked on a journey to transform their processes to take advantage of digital water technologies and ultimately implement these smart water systems, thus improving situational awareness, control and performance of water systems or their subsystems. However, a smart water system cannot be a goal by itself, rather a means of improving the sustainability and resilience of urban water systems. This talk will introduce a number of digital technologies and provide examples of their implementation in urban water management situations. Examples using Artificial Intelligence methods, such as Machine Learning and Evolutionary Optimisation, will be presented and lessons learned elaborated. Future trends in hydroinformatics and their implications for water management will also be discussed.

BRIEF BIO

Professor Dragan Savić FEng joined KWR Water Research Institute in the Netherlands as CEO on July 1 2018. Before joining KWR he was Director – and co-founder – of the Centre for Water Systems in Exeter, an internationally recognised group for excellence in water and environmental science research. Dragan Savić was the first Professor of Hydroinformatics in the UK having held this post University of Exeter since 2001. His research interests cover the interdisciplinary field of Hydro-Informatics, which transcends traditional boundaries of water/environmental sciences, informatics/computer science (including Artificial Intelligence, data mining and optimisation techniques) and environmental engineering. His recent work has concentrated on the theoretical development and application of Artificial Intelligence methods that have been applied to many fields of environmental science and engineering.

