"Gheorghe Asachi" Technical University of Iasi, Romania

APPLICATION OF A WEB-BASED DECISION SUPPORT SYSTEM FOR WATER SUPPLY NETWORKS

Quan Pan, Andreja Jonoski, Mario Erik Castro-Gama, Ioana Popescu[∗]

UNESCO-IHE, Institute for Water Education, P.O. Box 3015, 2601 DA Delft, Netherlands

Abstract

Decision support systems (DSS) have been wildly developed in the recent decades, in various areas of decision making. In the 21st century, the advances in Information and Communication Technology (ICT) have brought the era of cloud computing, in which network-distributed resources (simulation and optimization models, data, etc.) are integrated in decision support applications. The aim of the present article is to present the application of web-based decision support systems (WBDSS) in the area of water supply networks (WSN). A simplified method to integrate ICT solutions, comprising two multi-objective optimization algorithms, and one hydraulic simulation model, into one WBDSS is described. Details of the architecture, implementation, and the perspective of future development are addressed. The WBDSS is developed for one particular case study that represents one zone of the water distribution network of city of Milan in Italy. This zone, named Abbiategrasso pilot zone, is supplied by pumped water, and has been isolated from the rest of the water distribution network for purposes of testing new operational strategies, leading to increased energy and water efficiency and improved pressure management. The WBDSS has been developed and applied in this zone for pump scheduling optimization. Although the focus of the article is on WBDSS, selected results from this optimization are also presented. This research is part of the ICeWater project, which is funded by EU FP7 Programme.

[∗] Author to whom all correspondence should be addressed: e-mail: i.popescu@unesco-ihe.org; Phone: (31) 15 2151895; Fax: (31) 15-3122921