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Integrated Platform for Smart Operational Monitoring and Efficient Energy Management of Water Supply Networks

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Research project “PerManeNt” aims at developing an integrated platform for operational monitoring, smart control, and sustainable energy management of the external aqueduct system of the city of Patras in western Greece, which consists of more than 60 km of pressurized pipeline, 44 pumping wells, 3 springs, 22 regulating tanks, and 14 pumping stations. Given the significance of the existing infrastructure, 5 main pipelines, 7 pumping wells, 9 reservoirs, and 5 pumping stations were selected to be monitored in the context of: a) real-time data collection, processing and visualization, b) near real-time detection of system malfunctioning and automatic alarm generation, and c) generation of short and longer term forecasts for the water demand and corresponding energy consumption rates, based on hydrometeorological data and environmental indices. The development of the integrated platform is expected to have significant scientific, financial, societal and environmental impacts including: i) efficient water resources management and environmental protection, ii) reduction of the operational costs and regulator expenses for system maintenance and management, iii) promotion of citizens’ awareness regarding environmental issues, and iv) significant improvement of the quality of services offered, including pricing and emergency planning.

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