

DAIAD: Open Water Monitoring

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Abstract

Efficient water management is a challenging issue with the potential to affect the long-term well-being, economy and security of society. Policies and directions for sustainable water management have been established in the EU, with the objective to safeguard our future. However, short and medium term measures to support efficient water management practices for EU citizens are currently lacking. Consumers have limited means to accurately monitor their water consumption and thus stimuli to modify their behaviour towards a sustainable lifestyle. This is a result of a convoluted status quo, where innovation in water management through novel ICT technologies is limited and stagnant, due to business, policy, financial and technical reasons. Water management companies have limited incentives to modernize their infrastructure for real-time water monitoring. The public sector cannot provide adequate financial aid for this enormous effort. Further, consumers cannot voluntarily adopt water monitoring technologies due to their high cost and complexity.

A potentially groundbreaking approach for altering the current stagnation in efficient water use and reuse lies within the *empowerment of consumers*. The principles of *open knowledge*, *social innovation*, and *participation* have provided solutions and driven innovation in similar challenging and complex issues with extreme success. We believe that a similar bottom up method, in which citizens can voluntarily adopt low cost water monitoring services, self-induce behavioural changes in water consumption, and accordingly demand better services from water management stakeholders, can be a catalyst for large-scale changes in efficient water management.

The FP7 DAIAD project constitutes an innovative approach for addressing the challenge of efficient water management through real-time knowledge of residential water consumption. Our goal is to research and develop innovative low cost, inclusive technologies for real-time, high granularity water monitoring and knowledge extraction. We will devise multi-modal feedback interfaces, recommendation, and analysis services to communicate knowledge and incur behavioural changes to consumers in residential settings. We will apply Big Data management and analysis technologies to provide efficient management and analysis of real-time water consumption data, as well as multiple relevant data sources. This will enable water stakeholders to gain novel insight and explore the hidden correlations of the parameters that shape water demand strategies and pricing, thus leading to more efficient water management.

The project's technologies will be provided with an open knowledge license, to foster the production of multiple low cost compatible services from third parties. Consumers will be able to directly engage in efficient water management and form a vibrant, aware community. Water management companies will also have open access to these technologies and an established user base, thus enabling adoption and integration of these services on a larger scale. The dynamics of active participation and open knowledge will provide network effects, driving costs and complexities down, creating and promoting a water saving culture across the EU.

Extensive user trials will be performed to evaluate the benefits for consumers and all relevant stakeholders. We aim for sustainable gains in consumer behaviour through smarter consumption, and corresponding change from water management companies. Actions to welcome social participation and improve awareness are integrated throughout the project as inherent mediums to establish technology goals and maximize impact.

Keywords

Real time water monitoring, Big data, Interventions, Water demand management