

Executive Summary

Sensors & Monitoring Report

THE BACKGROUND OF THE SENSORS AND MONITORING REPORT

The far-reaching provisions of several European Directives, such as the Water Framework Directive (WFD) and the Environmental Liabilities Directive (ELD), combined with changing attitudes towards environmental protection, are placing a strong emphasis on the acceleration of the development of novel measurement technologies/applications/systems that generate cost-effective, robust and fit-for purpose information to address both current needs as well as more complex emerging issues such as source determination, ecological health assessment and new pollutants.

Like many other human activities using sensors, the Water Industry is strongly influenced by the permanent evolution of electronics, telecommunications and battery technologies.

In the recent years, significant results have already been obtained in various domains of the water business such as district metering, on-line leakage detection and automated meter reading.

With the advent of recent and forthcoming key innovations in ICT, micro/nano technologies and knowledge management, a new revolution has already started and is leading water utilities and water companies to adapt their practices and organisations to get ready to develop and manage Networks of Sensors for appropriate applications.

MAIN FINDINGS AND FUTURE RESEARCH NEEDS

European Directives, competitive business pressures and customer expectations are driving needs for better management of the water cycle. In future the management of the water cycle will not only be based on prediction of what can happen but also through a change of management based on information obtained by sensor networks, modelling and data handling. Objective of this action is to propose an R&D programme aimed at anticipating these changes and guaranteeing it will not only cover technical but also operational aspects.

In the coming decade the evolution in micro-sensors, electronics, telecommunications and battery technologies will enable massive and sustainable deployment of large sensor networks in applications such as drinking water and sewer networks, operation and asset management, river catchments and coastal zones to deliver modern efficient water service to customers and stakeholders.



A Common Vision for Water Research and Innovation

In this context proposals should consider developments in innovative affordable (micro & nano) sensor and detection systems, IT-issues, data networks and the construction of decision support systems to monitor and control the water cycle. Consideration will also be applied to the necessary optimisation of the total environmental and economic cost of ownership of the global system (especially by studying the impacts on operational & maintenance business processes and organisations).

Through active participation of water utilities, water agencies, industrial partners and SMEs is requested this development will:

- Assist water utilities and water agencies manage quality and quantity in the water cycle based on knowledge rather than guesswork
- Sustain leadership of European industry in environmental and water monitoring technologies and services
- Propose a set of operational recommendation for preventing the risk of “data overflow

CONCLUSIONS

Sensors and monitoring is a field undergoing rapid evolution facilitated by a wide number of technological advances. This is impacting the status quo of many sectors including the water sector and altering how water is managed throughout the water cycle. This report has looked at the overall concepts of sensors and monitoring and how the impact of the increasing volume of data captured will impact the processes of analysis and decision making. It has given a wide ranging view of the state of art through the projects and initiatives which are related to the field of sensors and monitoring throughout the water cycle. A number of projects include a certain element of sensors and monitoring technology which is required to meet the goal of the specific project. No one existing project currently captures the concept of using sensors and monitoring throughout all stages of the water cycle to make improved water management decisions.

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Coordinator:

Pierre SACAREAU

Editing:

Simon Ingall, WssTP
Tony SHARP, WssTP

Pictures:

Morguefile & BIGLO