D4.5 FIWARE4_Smart Metering and Citizen Engagement

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Project Consortium

Executive Summary

South West Water (SWW) provide cleaning drinking water for 1.7 million customers across the South West of England; treating water from large impounding reservoirs and rivers and pumping this supply across a vast network to the customers tap. The stewardship of water resources has always been paramount but is increasingly challenging with Covid-19 and climate change. One of the best ways to do this is by helping customers use less water and by reducing leakage from the network. The benefits also include lower customer water bills and reduced energy usage from treatment and pumping.
From previous studies, SWW understand that making customers more aware of their day-to-day water consumption drives positive behavioural changes and reduces overall consumption. Installing a standard water meter alone; which are typically read at 6-monthly intervals, can reduce consumption by up to 45%. Smart meters increase this meter read frequency to once per day and could promote further water saving benefits, especially if the data is made easily accessible to the customer. Furthermore, smart meter data can aid in the identification of leaks and bursts and wider understanding of water use behaviour to support supply and demand planning.
100 domestic smart meters and a Low Power Wide Area Network (LPWAN) were installed in a region called Great Torrington; South West England. FIWARE enabled technology was built to collect, store, and analyse water consumption data and four micro-services were developed including:
A customer smart phone application allowing customers with a smart meter to view their daily usage, compare their use against others and set consumption reduction targets,
A leakage detection and high consumption application which presents SWW with sensor and data driven alarms,
A machine learning tool to cluster customers into groups of similar water use behaviour to help SWW target customers with water efficiency campaigns
A hydraulic model linked to smart meter data built in EPANET for burst and leak detection
The services were co-designed and reviewed by a local water forum established in Great Torrington, led by the major and 12 other residents, and SWW operational staff responsible for leakage, water efficiency and water resources. They offer substantial benefits to both the customer and the Water Utility. For the customer; a reduced water bill and positive feedback they are helping the environment. For SWW; improved management of the water distribution system, faster response to network events (bursts and leaks), and a better understanding of leakage and water demand at household and area level.

As testimony to the project's success, SWW have already installed a further 450 Sigfox enabled smart meters whose data will be processed through the same technology framework, with this number extending to c.70,000 by 2025. The services developed will also feature in our longer-term strategies to steward water resources and reduce environmental impact in the face of climate change and hotter, drier weather in the summer.

The European Added Value and policies recommendations are detailed in the Added Value and Upscaling section.

Related Deliverables

The related deliverables are D1.1, D1.2, D1.3, D1.4, D2.3, D3.2, D3.4

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List of Acronyms/Glossary

AMI Automated Metering Infrastructure, allowing the water meter to be read remotely over a Low Powered Wide Area Network (LPWAN)

EWMA Exponential Weighted Moving Average

F4W Fiware4Water project

LPWAN Low Powered Wide Area Network

NGI Next Generation Internet

The Next Generation Internet (NGI) initiative, launched by the European Commission in the autumn of 2016, aims to shape the future internet as an interoperable platform ecosystem that embodies the values that Europe holds dear: openness, inclusivity, transparency, privacy, cooperation, and protection of data.

WDS Water Distribution System

WPL Work Packages Leaders

SWW South West Water