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NEW FOR 2021

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SPONSORED BY WATERWISE
NEW FOR 2021

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Woman of the Year
SPONSORED BY BRITISH WATER
NEW FOR 2021

Overall Winner of the Year

DATA ANALYTICS, CLOUD AND AI PROJECT OF THE YEAR

WINNER: YORKSHIRE WATER AND SIEMENS PROJECT: BLOCKAGE PREDICTION USING AI TO IMPROVE YORKSHIRE'S RIVERS

The UK's 30,000 combined sewer overflows (CSOs) are the primary source of these spills. However, identifying poor-performing and at-risk assets is difficult. Each CSO has unique performance characteristics depending on its design, position in the network and catchment – for example, level of urbanisation and gradient.

Consequently, threshold-based approaches struggle to differentiate normal and abnormal operation and statistical approaches miss many issues and raise too many false alarms.

Yorkshire Water embarked upon a research project with The University of Sheffield to develop and test an artificial intelligence solution with the aim of predicting and identifying CSO blockages. Artificial Intelligence (AI) models were trained to learn the unique behaviour of each asset and a fuzzy logic system applied to classify differences between the observed and predicted levels. The analytics were a success, but the project stalled at proof of concept.

The next objective was to deliver the AI in a solution able to scale across 2,000 assets. The aims were to transfer the University of Sheffield analytics from a previous project into an application that was secure, scalable and user-friendly. Siemens designed an updated analytics architecture to replicate the impact of the original research project. Siemens and Yorkshire Water then co-created a scope, listed requirements, and shared historic data. User experience interviews were conducted with analysts, decision makers and field service teams. A site visit helped the Siemens team shadow the workflow.

In April 2020, a minimal viable product was (MVP) deployed in parallel to the existing Yorkshire Water solution for finding CSO blockages. The MVP application was progressed through an agile software development process. In bi-weekly meetings Siemens and Yorkshire Water operational teams reviewed the latest features and reported back issues and areas for improvement, which were then

acted on.

In August 2020, a stable version one application was released to Yorkshire Water, and made globally available in Oct 2020. The University of Sheffield then independently validated the impact of application by assessing 38 assets and 21,300 days of operational data.

Shortlist:

- Intellitect Water, Southern Water – Real Time Intelligent Water Network Management System
- Thames Water, Morrison Water Services and Hydraulic Analysis - Digital Twin Modelling - Artificial Intelligence to Tackle Leakage
- Thames Water, Morrison Water Services and Eurovia - Augmented Visualisation of Underground Services - X-Ray Utility Works to Make the Invisible Visible
- Thames Water - WHERE mobile application
- **HIGHLY COMMENDED:** UnifAI Technology - AI for Enhanced Water Quality Monitoring - Poole Harbour
- Yorkshire Water, Xylem and Stantec - Hadfield Smart Water Network
- Yorkshire Water and Stantec – Digital Transformation for Flood Prevention in Homes
- Yorkshire Water, Morrison Water Services & Korec Group - A Geo-Spatial Approach to Real-Time Field Data

THE JUDGES SAID...

“This entry demonstrates effective use of emerging technologies, is scalable and has already been shared across the sector. Particularly impressive are the collaborations Yorkshire Water sought to successfully deliver the project.”