I2PANEMA’s IoT software solution optimises efficiency and sustainability in ports

Ports around the world face numerous challenges, from managing increased cargo demand to ensuring efficiency and sustainability in the face of urbanisation and labour management issues. The ITEA project I2PANEMA, comprising 17 partners from Germany, Spain and Türkiye, including Prodevelop, S.L., has integrated IoT solutions and new services for data handling in ports to enhance efficiency, sustainability and supply chain resilience in various port business cases. With a focus on data management and analysis, the project has achieved remarkable outcomes, including noise reduction, container localisation and logbook digitalisation. By leveraging IoT, I2PANEMA is revolutionising port operations.

Today, I2PANEMA is announced as the winner of the ITEA Award 2023 for Exceptional Excellence, outstanding in the three categories of innovation, business impact and standardisation. Moreover, individual prizes were also given to selected recipients.
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partners, being Prodevelop one of the proud winners by successfully leading the IoT interoperability work.

Improving business and lives in port cities

I2PANEMA has demonstrated that ferry arrival times in Hamburg can be accurately predicted to within 15 seconds, which has resulted in a 100% reduction in average processing time for stop announcements. In the Assan port in Türkiye, sensor-based container localisation has enhanced operations by over 10% in a single shift, with completion time reduced by more than 15% and accidents decreased by more than 50%, boosting both profitability and safety. Accurate prediction of PM10 emissions in Gijón Port has been demonstrated with 100% reduction in average processing time for environmental alerts and emergency protocol activation.

An added benefit of this operational and commercial success is the reduction in pollution and noise, making port cities even more pleasant to live in.

Standardising and enhancing port operations

In developing an IoT port reference architecture tailored for operational use in ports, the I2PANEMA project enhances the robustness of transport chains and establishes a strong communication infrastructure for IoT applications. Account was also taken on data security and the integration of heterogeneous IT systems since these are critical factors for the success of smart ports. The communication infrastructure provided by I2PANEMA is instrumental in helping ports more easily adopt and utilise IoT applications, thereby enhancing efficiency, sustainability and overall operations.

The I2PANEMA project enabled us to start our new-era POSIDONIA GREEN, a port climate change web application addressed to Port Authorities (PA), that provides not only real-time monitoring and alert notifications, but also highly accurate AI-base emission predictions to minimize the environmental impact of cargo operations”, said Miguel Montesinos, CEO at Prodevelop, S.L.

The project partners are currently finalising the new ISO standard 4891: Smart Applications for Ships. Once approved, the new standard will provide a common framework and guidelines for the development and integration of smart applications, enabling efficient communication and data exchange between different systems. By adopting a customer-centric approach, ISO 4891 is designed to meet the needs of users and promote digital transformation in the maritime industry.

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