

PRESS RELEASE

ANEOSP: Innovative IoT solution for Occupational Safety in Ports

- **Development of IoT nodes with Edge Computing and Computer Vision capabilities for real-time risk detection**
- **SECMOTIC will work hand-by-hand with a Consortium of 27 entities (aerOS project), aiming at enhancing safety and operational efficiency in port operations.**

Seville, 4 July, 2024 – In a significant stride towards enhancing occupational safety in port operations, ANEOSP (AI Nodes for Enhanced Occupational Safety in Ports) has introduced a groundbreaking solution leveraging advanced IoT and edge computing technologies.

This project, recipient of cascade funding under the HE project aerOS (GA number 101069732), focuses on the development, deployment, and integration of a set of IoT nodes, equipped with video sensors and wireless communication modules, to ensure the safety of workers during loading, unloading, and container transfer operations.

The ANEOSP solution integrates seamlessly with the IoT-Edge-Cloud continuum infrastructure provided by aerOS, enabling real-time capture, transmission, and analysis of streaming video to detect potential safety risks. The nodes, acting as "Infrastructure Elements (IE)" within the aerOS system, possess sufficient computational capacity to run lightweight computer vision models specifically designed for preventing occupational hazards in container operations.

Advanced Detection Models for Enhanced Safety

One of the core components of this innovative solution is the suite of computer vision models developed under the aerOS Open Call. These models focus on various aspects of occupational safety:

1. **Proximity Detection Model:** By installing IoT-Edge nodes on the sides, front, and rear of Ship-To-Shore (STS) cranes.
2. , the computer vision model detects workers, machinery, or obstacles that are too close, thereby preventing potential accidents.
3. **Risk Behaviour Detection Models:** This set of models identifies risky behaviors, such as workers not wearing adequate protective equipment, including helmets.
4. **STS Cranes Detection Model:** IoT nodes installed on top of STS cranes detect if they are positioned directly below a container being loaded by an STS crane, alerting workers to this risk.
5. **Unstable or Misplaced Container Detection Model:** By placing IoT nodes on port structures with a sufficient field of view, the model identifies containers that are being transported, unloaded, or stacked unsafely, preventing falls or collapses.

Integration with Edge and Cloud Infrastructure

The captured videos from these IoT-Edge nodes can be routed to edge servers managed by the aerOS meta-operating system, which is entirely based on open source technologies and it is built on top of the operating system and allows different processes to communicate with each other at runtime.

These servers can process and analyze the video streams, applying more complex computer vision machine learning models that require greater computational power than what is available on the individual nodes. This dual-layer processing ensures both immediate and in-depth analysis of safety conditions.

Real-Time Management and Notifications

Complementing this technological framework is the development of a management application and a notification service compliant with the NGSi-LD information model, which underpins the aerOS Data Fabric and catalog. This setup allows for the efficient sending and reception of critical alerts across all IEs, facilitating real-time communication of detected safety incidents.

Benefits of ANEOSP Solution

The ANEOSP project promises several significant benefits for port operations:

- **Improved Worker Safety:** By detecting potential risks in real time, the solution aims to reduce accident rates and enhance the overall safety of port workers.
- **Operational Efficiency:** The real-time risk detection not only protects workers but also improves operational efficiency and productivity.

- **Cost-Effectiveness:** The solution is designed for easy deployment and requires minimal maintenance, making it a cost-effective safety measure for port facilities.
- **Safety Culture:** By integrating advanced safety technologies, ports can foster a culture of safety and compliance, benefiting all stakeholders.

About ANEOSP

ANEOSP is a reality thanks to the cascade funding scheme that aerOS project is conducting. ANEOSP has been one of the awarded proposals under the first round of Open Calls managed by the Horizon Europe Research and Innovation Action aerOS.

ANEOSP is at the forefront of leveraging AI and IoT technologies to enhance occupational safety in critical operational environments. Through its collaboration with aerOS, ANEOSP is committed to creating safer, more efficient port operations, safeguarding the wellbeing of workers, and contributing to the advancement of smart port technologies.

This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No. 101069732



Head of communication:

Álvaro Cárdenas.

Teléfono: **+34 678 186 258.**

Email: alvaro@secmotic.com