



*December 2024 – February 2025*



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## ISSUE HIGHLIGHTS

The 10<sup>th</sup> issue of aerOS newsletter presents the project activities during the period December 2024 – February 2025. This specific issue focuses on the communication and dissemination activities, aerOS New Pilots webpages, and the project period activities and the latest Plenary Meeting.


aerOS trimester activities in numbers:

- aerOS new Pilots Webpage
- 1 Presentation
- 1 Co-organised workshop
- New Publications
- Swiss Smart Factory Open Day
- DATAMITE Meetup
- EUCloudEdgeIoT Activities
- Submitted deliverable
- aerOS Technical Meeting




## aerOS new Pilots Webpage

The aerOS project has launched its updated pilot webpage, providing an enhanced user experience and streamlined access to key insights. The new structure offers detailed information on pilot deployments, use cases, and technological advancements. Visitors can explore the applications of aerOS, showcasing its impact on edge-to-cloud continuum solutions. Each pilot/scenario has its own dedicated webpage consisting of two subpages: (a) Pilot/scenario specific information/leaflet (b) Pilot/scenario specific videos You may find more information here: <https://aeros-project.eu/use-cases/>



aerOS: Autonomous, scalable, trustworthy, intelligent European meta Operating System for the IoT edge-cloud continuum



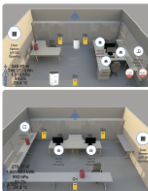
### PILOT 5: Energy Efficient, Health Safe & Sustainable Smart Buildings

OTE, NCSR Demokritos, Fagus Innovations & Services, Infolytis, Polytechnic University of Valencia

#### Pilot & Scenario Overview

Enterprise buildings can save energy by using advanced sensors and automated controls in HVAC (Heating, Ventilation and Air Conditioning) taking advantage of building automation with data analytics. At the same time in the last years, the Coronavirus pandemic disruptively affected the traditional work norms, stranding previously crowded office buildings and embracing flexible working and mobile workspaces. Evidently, the post-pandemic workplaces have become open spaces with proper employees' placement, energy efficiency, business and personal preferences becoming a complex and dynamic task. In this transformation towards flexible, safe, and sustainable workplaces, IoT technology and Analytics through the aerOS capabilities can offer a unique, autonomous solution towards safe and sustainable workplaces. That solution, can be deployed in a diverse set of buildings, employing plethora of IoT solutions aligned to the IoT sourcing strategy of each enterprise.

This use case, implemented in an office building of OTE (Athens, Greece) and driven by partners OTE, NCSR, FOCUS, INF and UPV, aims to demonstrate gains of the aerOS architecture in an edge deployment for energy efficient, sustainable, flexible, and health-safe smart buildings. A wide number of IoT devices furnished with the aerOS capabilities are deployed to meter energy, luminosity, CO<sub>2</sub>, humidity, temperature, motion detection, and desk occupancy. The data collected in conjunction with the AI-generated recommendations towards minimizing energy consumption and maximizing health measures are used to determine the appropriate clustering of employees in the offices and deduce the recommended employees seating, while exploited to actuate appropriately the ventilation, heating and air-condition systems and control luminosity.




#### Infrastructure & Technology

The pilot consists of the following systems:

- An end-to-end IoT application, already developed by OTE and adapted following the aerOS Domain and Infrastructure
- Element concepts and re-architected to incorporate the aerOS high-level and low-level automation, that includes:
  - Front-end, incorporating a variety of sensors, orchestrated by IoT Gateways
  - Back-end applications, including InfluxDB, MQTT, Grafana, Prometheus, HomeAssistant
  - Health & Energy Optimization AI System
  - Seat Recommendation System
  - End-user application

All the pilot components have been designed to support the semantics interoperability developments of the project, using the FIWARE context broker.





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### PILOT 1.1: Green manufacturing and CO2 footprint monitoring

Switzerland Innovation Park Biel

#### Pilot & Scenario Overview

Switzerland Innovation Park Biel/Bienne (SIPBB) is responsible for the first scenario in pilot 1, taking place in the Swiss Smart Factory in Biel/Bienne. SIPBB is a private Swiss non-profit organisation that conducts and supports industry-related and primarily applied research and development. It aims to foster sustainable, human-centered and resilient manufacturing industry.



#### Infrastructure & Technology

The infrastructure is supplied by Nasertic, while the Swiss Smart Factory offers a 1000 m<sup>2</sup> testing and demonstration platform focused on Industry 4.0. This space features a large production line dedicated to manufacturing quadcopter and hexacopter drones with batch size 1 capabilities.

APIs are currently being integrated with selected project assets, and the Air Management System from SMC has already been installed. Additionally, Node-Red is being utilized to calculate the carbon footprint of the products. The next phase of the project involves the deployment of aerOS domains.



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### PILOT 4: Smart edge services for the Port Continuum

Eurogate & Prodevelop & Cyprus University of Technology

#### Pilot & Scenario Overview

The Smart edge services for the Port Continuum pilot is led by EUROGATE Container Terminal Limassol (EGCTL), the largest terminal in Cyprus, handling more than 90% of the island's gateway container cargo. Technically, EGCTL is supported by partner Prodevelop (PRO) and the Cyprus University of Technology (CUT).

EGCTL is in the process of digitizing and automating its operations processes. Within this context, aerOS is the starting point for creating a scalable IoT infrastructure that the terminal can build on and expand in the future, with more than two hundred devices connected in the next 5 years. The pilot is divided in 2 use case scenarios: predictive maintenance of Container Handling Equipment (CHE), and risk prevention via Computer Vision on the edge.




#### Infrastructure & Technology

The terminal equipment consists of 36 Straddle Carriers (SC), 4 Ship-To-Shore (STS) cranes, and other types of CHE. Several of these assets are part of the pilot, forming an aerOS environment with multiple heterogeneous IEs. They can be split into the three tiers of IoT-Edge-Cloud continuum, that redound in the establishment of two domains in the pilot.

- For use case scenario 1, the aerOS EUROGATE domain is formed by multiple IEs installed on CHEs that collect data from sensors and PLCs and perform basic preprocessing. In addition, the aerOS EUROGATE domain acts as the entry domain.
- For use case scenario 2, one additional aerOS domain is involved. The aerOS CUT handles the collection of video feeds from the cameras installed on the STS cranes, and is in charge of the development of computer vision models for automatic container damage recognition.



## Communication & Dissemination Activities

### Presentation

- "aerOS Open Call #2 welcome webinar" took place on December 12<sup>th</sup>, bringing together innovators and experts in edge computing! The webinar included the project scope, and the fundamental elements of our project.



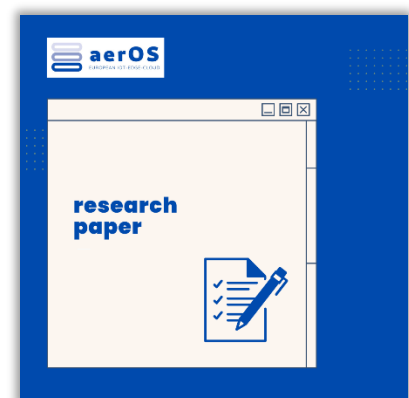
### Co-organised Workshop

- The 2nd International Workshop on MetaOS for the Cloud-Edge-IoT Continuum (MECC 2025) is fast approaching! Co-located with ACM EuroSys 2025 in Rotterdam, Netherlands, on March 31, 2025, this workshop is a key platform for researchers and innovators to shape the future of distributed systems, interoperability, and cloud-edge-IoT integration. Submit your groundbreaking work on interoperability, decentralized resource management, security, and sustainability by January 25, 2025. Don't miss this opportunity to contribute! More details: <https://meccworkshop.github.io/>



### News Publications

- The aerOS project has recently released new publications that showcase its latest advancements in edge-to-cloud solutions, interoperability, and system optimization. These publications highlight key findings, technical innovations, and real-world applications, offering valuable insights into the evolving landscape of distributed systems. Find all the publication here: <https://aeros-project.eu/dissemination/publications/>



## Swiss Smart Factory Open Day

The 1st edition of the Swiss Smart Factory Open Day took place on December 10, 2024, at the Switzerland Innovation Park Biel/Bienne Ltd., Aarbergstrasse 46, 2503 Biel/Bienne, Switzerland. The event showcased cutting-edge technologies and innovative solutions from the SSF network, drawing attendees from various industries. Highlights included 30-minute guided tours by the SSF Team, where visitors explored key technologies designed to simplify production processes. Alongside over 30 network partners, integrated solutions were presented at the SSF Lighthouse Factory Industry 4.0, offering a glimpse into the future of manufacturing.

The Swiss Smart Factory (SSF), part of the Switzerland Innovation Park Biel/Bienne (SIPBB), is Switzerland's first test and demonstration platform for Industry 4.0. It serves as an innovation hub where companies, researchers, and startups collaborate to develop and test cutting-edge manufacturing technologies. SSF focuses on digitalization, automation, and smart production, offering a real-world environment for pioneering industrial solutions. By fostering innovation and knowledge transfer, it plays a key role in shaping the future of advanced manufacturing.



## *DATAMITE Meetup*

aerOS project participated at the DATAMITE Meetup, which happened on February 6<sup>th</sup>, at OTE HQs in Athens. This unique event brought together researchers and industry professionals to foster collaboration in EU-funded projects. Hosted by OTE's IT Innovation Center, the meetup featured five panel discussions on topics like data ethics, AI, IoT, and sustainable innovation.



## *EUCloudEdgeIoT Activities*

### *EUCloudEdgeIoT news digest issue*

➤ Issue 21:

<https://preview.mailerlite.io/preview/185345/emails/144856110972535956>

### *CEI-Sphere*

Discover CEI-Sphere, a new initiative driving innovation in the Cloud-Edge-IoT ecosystem. Over the next 30 months, CEI-Sphere aims to foster standardization, interoperability, and key partnerships, supporting large-scale pilots like O-CEI and COP-PILOT. Find more information here: <https://ceisphere.eu/>



## *Submitted Deliverable*

**D5.2 Integration, evaluation plan and KPIs definition (2) [M24]** – Will document the three pilots and integrated third parties, addressing the proposed use cases and scenarios. This will be the final version.



All public aerOS deliverables are available for downloading  
at aerOS website: <https://aeros-project.eu/dissemination/deliverables/>

## *aerOS Technical Meeting*

The **aerOS Technical Meeting** took place on 4-5 February at NCSR "Demokritos" premises. The meeting brought together our team to explore the latest developments, engage in dynamic discussions, and tackle key challenges. Over these days, participants collaborated, exchanging insights and driving technical advancements in the project's progress. The meeting concluded with significant achievements, and a shared commitment for the upcoming months. To mark the occasion, our partners gathered for a group photo, celebrating teamwork and the collective drive toward shaping the future of aerOS. Stay tuned for more updates.



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Call: WORLD LEADING DATA AND COMPUTING TECHNOLOGIES 2021  
Topic: HE-CL4-2021-DATA-01-05  
Type of Action: RIA  
Duration: 36 Months  
Start Date: 1 September 2022