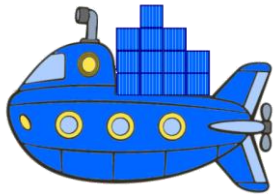


Next Generation Meta Operating System



NEMO

Introducing Next Generation Meta Operating System(metaOS)

Maria Belesioti

26th InfoCom World Conference

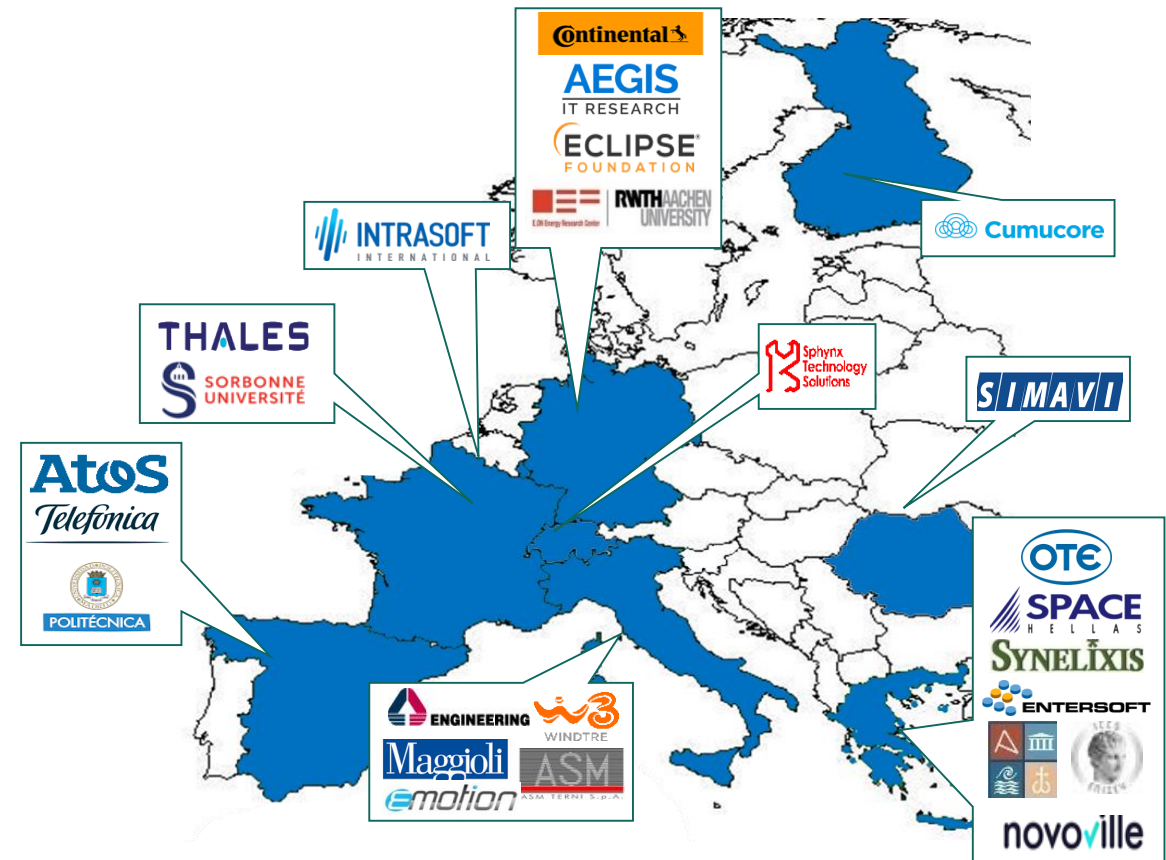


NEMO will receive funding from the EU Horizon Europe research and innovation Programme under Grant Agreement No. 101070118 (under preparation)



NEMO @ a Glance

- Title: Next Generation Meta Operating System
- Grant agreement ID: 101070118
- H2020 Call: Horizon-CL4-2021-DATA-01-05
- Funding Instrument: RIA (Research and Innovation Action)
- Coordinator: ATOS
- Duration: 36 months
- Starting Date: 1st September 2022
- EU Contribution: 10.5 MEuros
- 26 Partners – 9 Countries



Vision

NEMO aims to build the meta-Operating System (metaOS), which will enable multi-cluster and multi-network orchestration of containerized workloads across the IoT, edge and cloud continuum.

As a (meta-)OS, NEMO will be user-centric, facilitating users to develop and deploy on top of NEMO.

Moreover, NEMO will enable cloud and infrastructure providers to integrate their computing and networking resources into NEMO's infrastructure.



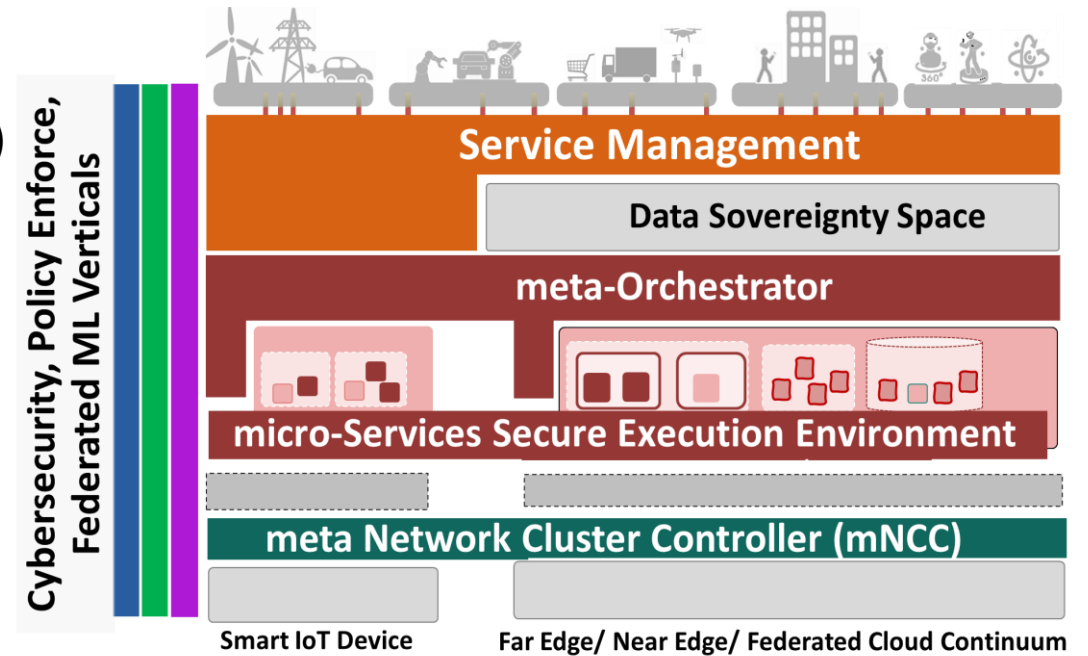
NEMO: Next Generation Meta Operating System

Technological Innovations

- ✓ Full stack, fully configurable, cloud-native, data aware meta-OS
- ✓ *Bring intelligence closer to data/make AI integral part of meta-OS*
 - Self-Organized/Healing Network Clusters/5G/6G Integration
 - Cybersecure micro-Service Secure Execution Environment (mSEE)
 - SLO/EE based self-optimized meta-Orchestrator
 - ZeroOps Plug-in mechanism
- ✓ Cybersecurity, Privacy Compliance & Federated ML verticals

Expected Impact (Technical, Economical, Environmental, Social)

- ✓ **Novel components, tools, methods**
- ✓ **Dataspace & IoT-Edge continuum integration** in reality
- ✓ **New paradigms in Smart-X Apps delivery**
- ✓ **Push processing to cloud => directly reduce CO2**
- ✓ **Smart Agriculture:** reduce pesticides/spraying/soil erosion....
- ✓ **Closing the digital gap** by enabling Smart-X Edge processing
- ✓ **Reinforcing competitiveness** via open-source & Open Calls



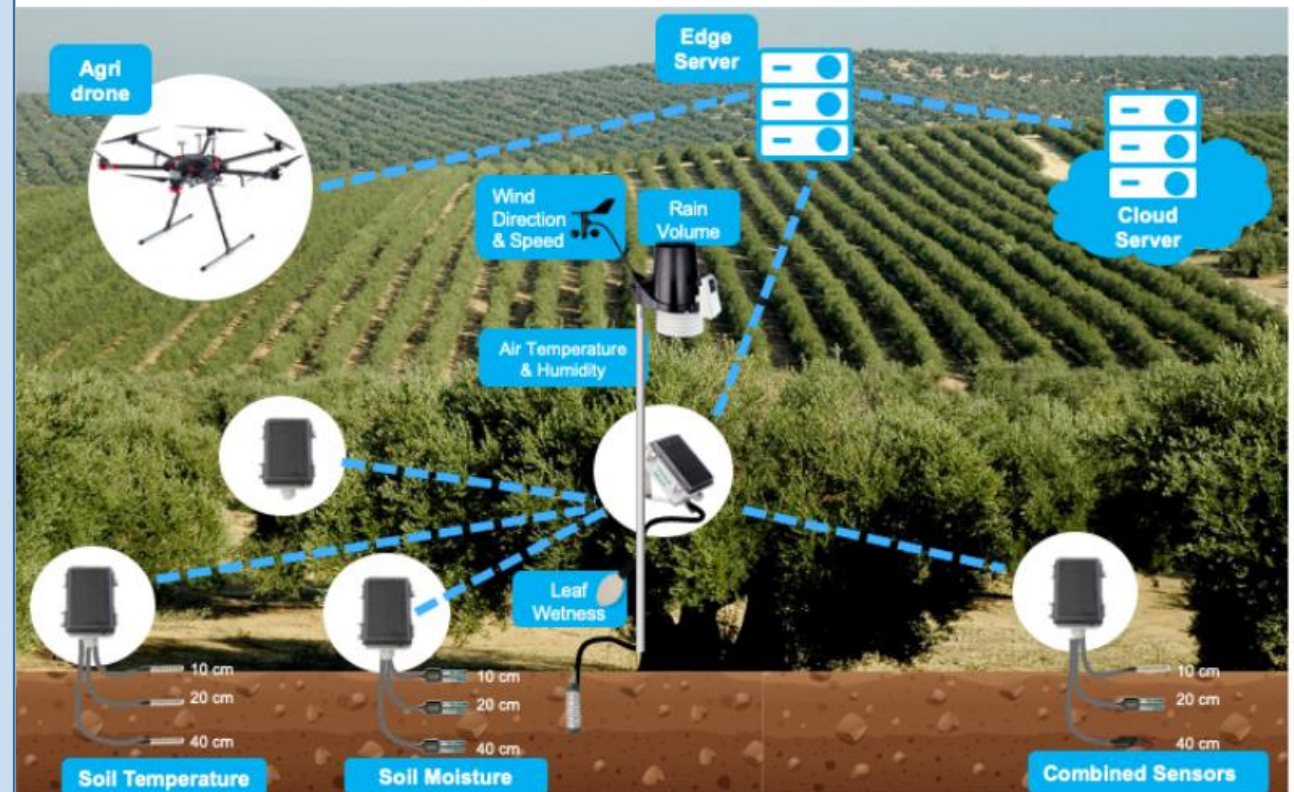
Validation and Pilots

- ✓ 5+1 Living Labs
 - ✓ Monemvasia
 - ✓ Terni
 - ✓ Ingolstadt
 - ✓ Athens
- ✓ Cross platform seamless access to more than 30 types of heterogeneous sensors, drones, robots and smartphones.
- ✓ 9 use cases & 10 new use cases via Open call #2



Smart Farming Pilot

📍 Agia Sofia estate, Monemvasia, Greece



- ✓ Aerial Precision Bio-Spraying
- ✓ Terrestrial Precision Bio-Spraying
- ✓ Improved crop disease prediction based on both micro-clima measurements
- ✓ On-device intelligent decisions to trigger actuations
- ✓ Protection of olive trees from olive fruit fly through aerial spraying



Smart Energy & Smart Mobility

Terni, Italy

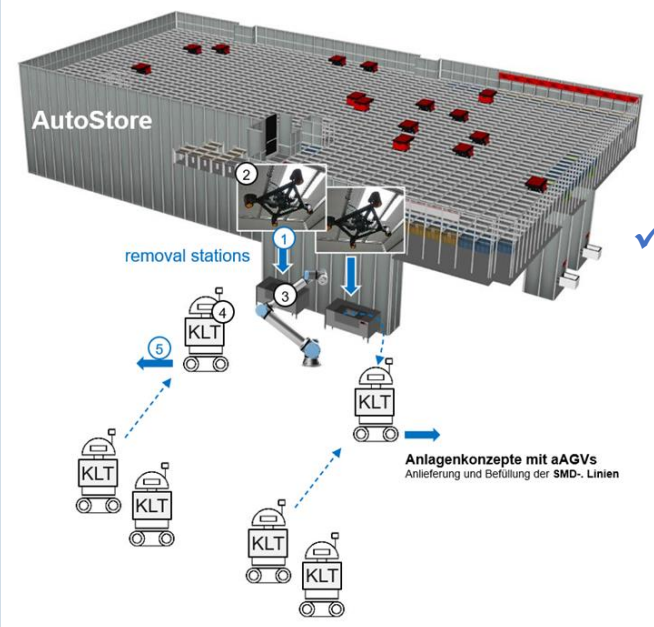


- ✓ Smart Grid Flexibility: Monitoring and analysing of MV/LV electricity voltage quality by using innovative power sensors.
 - ✓ Validate NEMO ability to monitor and stabilize the electricity smart grid.
- ✓ Smart Mobility/City: Drivers-friendly scenarios based on traffic flow and parking prediction.
 - ✓ Support citizens eco-mobility in a smart city scenario combining crowd sourcing info and public transportation, weather/noise data, along with historical data and analysis of CCTV/traffic.

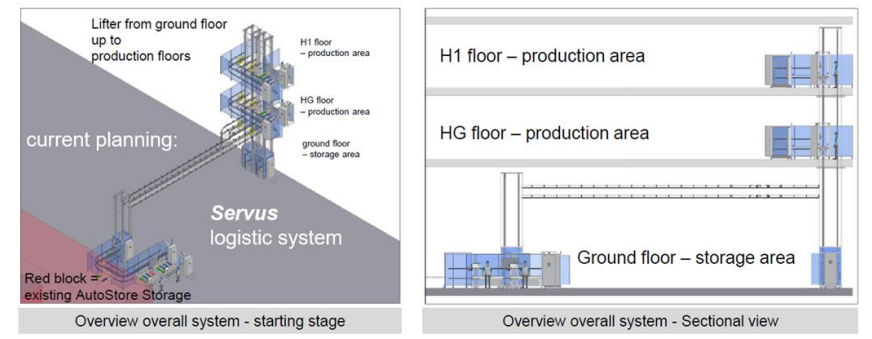


Smart Manufacturing & Industry 4.0 Pilot

Ingolstadt, Germany



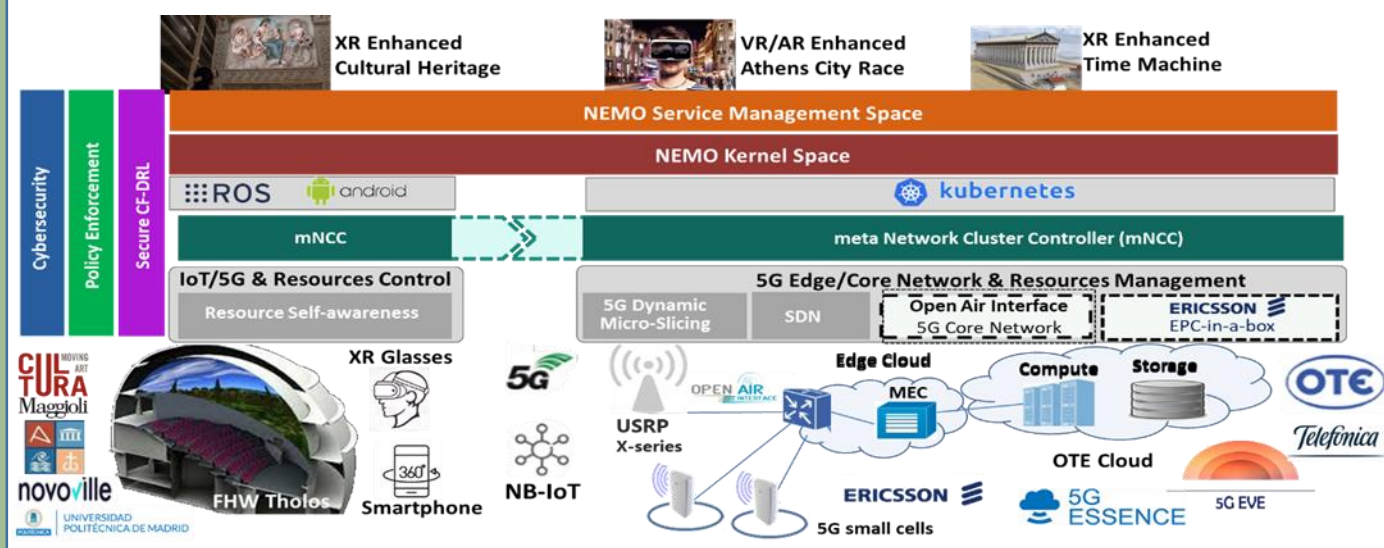
- ✓ Fully automated indoor logistics/supply chain
- ✓ Fully automated material picking (SMD-Components) from Auto Store and autonomous transfer to the production line.



- ✓ Human-centered indoor factory environment safety
- ✓ AI functions will detect the position of each body and build a "safety shell" around it to ensure human-centred safety.
- ✓ Enable autonomous avoidance of potential collision between AGVs, or between a worker and an AGV.

Smart Media & XR Pilot

Athens, Greece



- ✓ Round of Athens Race
- ✓ XR Time Machine

- ✓ Very fast/time sensitive services migration to the edge and extreme large media from thousands of users.
- ✓ Advanced FML analytics to calculate the accurate positions and orientation and create ML models and alarms.
- ✓ Gesture recognition during VR Dome experience



Thank you for your attention!!!

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