NEMO

DEMO PRESS KIT

June 2022

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Grant Agreement n° 860441.

A European technology:

Background

NEMO has developed an advanced and purely European solution, to reduce emissions and noise from transport by empirically measuring individual vehicles to apply personalized tariffs to the most emitting vehicles or preventing their access to sensitive zones.

The whole NEMO concept is focused on a reliable novel Remote Sensing system to measure traffic emissions and noise. The system can be integrated into existing road, rail, maritime and IT infrastructures to make it standardized, more user-friendly and able to operate continuously without human supervision for continuous monitoring. To clean and silence the environment in sensitive zones (such as LEZs) a three-step approach is designed: (1) the identification of polluting and noisy vehicles through remote sensing of the exhaust gases and the noise and controlling the access to the LEZ of these vehicles; (2) to verify the measurements with a methodology harmonized with the PTIs in order to legally scale up the solution and (3) further active cleaning and silencing of the traffic inside the LEZ by innovative solutions in the pavement and road vicinity.

NAUTILUS is the name of the IT solution that allows easy implementation in EU member states, allowing the synchronization of different intelligent systems and sensors for individual vehicles' identification and communication. NAUTILUS will make it possible to integrate NEMO's sensors and communication technologies, as well as other external systems that may complement it in the future in different scenarios, regardless of the road or toll operator.

The demos:

From lab to street

The individual technologies that make up NEMO’s innovative solution have been developed and tested first at laboratories, then taken to dedicated test sites, and are now ready to be taken to the streets of selected European cities.

The combined technologies of the emission and noise remote-sensing devices (E-RSD and N-RSD) was validated at Teesdorf in Austria. After the validation, four real-life demos are planned. The first one, in Florence, was successfully carried out in June 2022.

The aim of the tests is to demonstrate NEMO solutions and the implementation of a standardized methodology. The pilots will be carried out together with local administrations and related stakeholders, to guarantee the smooth execution of each activity, to put in motion the required mobility policies and to monitor the impact and results of the pilots.

The locations

Real-life environments

Florence

The demo in Florence will be focused on urban road traffic. TOSC and the municipality of Florence (FIRE) will lead this demo. Their direct involvement will facilitate the entire execution of the demo, granting permits, providing technical data of the identified vehicles and sending notifications to the drivers. This demo is focused on the implementation of HE identification programs in combination with existing LEZs in Europe. One mixture of NEMO's urban porous asphalt will be tested in a road city as well.

Madrid

The demo in Madrid will be focused on urban and peri-urban road traffic. An integration of the β-Prototype in a gantry of the major motorway that surrounds the city (M-30) will test a fixed monitoring scenario. This demo will also test the concept of HE validation to prevent false positives, sending HEs to PTIs for OBD. This demo will be complemented with the LEZ "Madrid Central", which will be improved with Remote Sensing, as ORSE has started a project with Madrid City Council to integrate an RSD in Madrid Central25. ORSE collaborates in this integration with EYSA (see commitment letter in the Annex), the company that manages the LEZ and the ALPR network, the accesses and the fines for transgressors. EYSA will collaborate closely with NEMO. In addition to the above, the mitigation potential of the multifunctional barrier in real conditions will also be assessed in a real road.

Valencia, Spain

The demo in Valencia will be focused on railway traffic emissions and sea traffic noise and emissions.
The port of Valencia is the main port in the Mediterranean in container traffic and the fifth in Europe26. In 2018, 6,048 ships arrived at the Port. All the trains that arrive at the port (+3,600 per year) are diesel and will remain diesel for at least the next decades. The E-RSD will be a system that can be integrated into the railway environment. The E-RSD cross-rail configuration will be mounted with the laser crossing the track at a height of approximately 5 meters to measure gaseous emission by diesel traction. The E-CAM will be deployed on the port ground to measure the emissions form large ship cruises. The lessons learned in this experiment will be transferred to other transport modes.

The Netherlands

The demo in the Netherlands will be focused on railway traffic noise. The N-RSD will focus on detecting noisy wagons in a train. Freight trains are composed of a series of wagons and some of these may be significantly noisier than average. NEMO's solution will establish noise emissions from individual wagons in a train and thereby be able to identify the high emitters. Photocells and force sensors in the rail will determine the speed of the passing train and the position of each wagon. The identification of the vehicle in terms of UIC registration shall be done either by the code readable through RFID or by optical reading of the displayed code at the side of the passing wagon. The system will operate on both tracks with opposing directions.

Contacts:

Further information

You can get more details about the individual demos, locations and technologies used through below contacts.

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Demos

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Project press kit:

Downloadable elements

Official project press release

NEMO's official press release provides a brief introduction to the overall project and its working areas.

Project logo

The project logo can be downloaded in various versions here.

Photos and other elements

You can download images and other elements from our website.

Reports and publications

Official reports and publications can be downloaded from here.

Social media

You can also follow us and connect on social media.

LinkedIn: https://www.linkedin.com/showcase/nemo-cities

Twitter: https://twitter.com/NemoCities

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