



Press Release

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Flagship EU electromobility project completes first cross-country test drive to identify issues affecting long distance travel in electric vehicles

The European project NeMo – Hyper-Network for Electromobility –has just carried out a test drive to identify potential barriers in using electric cars for long-distance travel, including across borders.

Electric Vehicle (EV) charging stations belong to a variety of different networks and operate with different conditions of access and payment. Although the recent concept of roaming platforms has brought many networks together and improved seamlessness for drivers, the interoperability issue remains. This makes charging of EVs difficult for users in many cases, especially when they drive outside their local area.

The NeMo project is building a Hyper-Network, a distributed environment with open architecture based on standardised interfaces, in order to link all the different electromobility services and actors (such as charging stations and their operators, EVs and their owners, grid operators, service platforms, etc.), making access to charging stations across Europe as simple for the user as it is to roam with their mobile phone or to use their credit or debit card abroad.

The project involves carrying out long distance cross-country test drives in Europe, before and after the deployment of the NeMo Hyper-Network, to identify the appropriate measures to assess and evaluate the NeMo impacts and benefits, (i.e. easiness of trip planning, easiness and length of time for charging, consequences of searching for another charging station in case charging at the one selected is not possible).

The first NeMo cross-country test drive was held from 2 to 4 October 2017, with the objective to examine the interoperability of charging stations in different countries and the autonomy of the cars under different driving conditions. During this cross-country test drive two Renault ZOE electric cars were used, with two drivers each. The drivers were from NeMo partner organisations and three out of the four did not have prior experience in the use of EVs.

The trip:

The two NeMo vehicles took different routes from Turin to Barcelona, covering a distance of over 950km. This was done because at higher speeds the car battery becomes depleted at a faster rate, so each car followed a different itinerary, swapping each day between an “eco-route” using national and regional roads and a “fast route” using motorways.

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Each car needed to charge between 3 and 5 times per day on the route from Turin to Grenoble (Day 1), to Narbonne (on Day 2) and to Barcelona (on Day 3). Vehicles were only charged at public charging stations and not during overnight stops.

The four NeMo drivers were provided with a route plan and roaming charging cards, such as the Renault ZE Pass and ChargeMap applications.

Some of the charging stations were linked to these networks, while others were not. In addition, different smartphone applications sometimes needed to be downloaded for authentication and payment for charging the vehicle.

The outcomes:

After the end of their trip the four NeMo drivers have highlighted the following key issues:

- The experienced Electric Vehicle user had fewer issues in accessing and using different types of charging stations;
- Long distance trips with EVs need to be carefully planned to ensure the locations of charging stations are known, including availability of charging at overnight stops;
- Several charging stations that are not connected to a roaming network required an application to be downloaded for charging the vehicle. In these cases, drivers needed a smartphone with data or Wi-Fi and access to their online banking in order to be able to download the required application, charge the vehicle;
- Plenty of time is needed for a long distance journey, with more planning needed compared to a petrol or diesel car, as regular stops of up to an hour were needed to charge, depending on the type of charging station and the driving speed;
- Booking of a charging station was impossible: in general the NeMo drivers decided to stop at locations where there was a charging station available, even if charging was not necessary, as a precaution in case the next charging station was unavailable or impossible to use;
- Significant differences were noticed in authentication: apps, card, ID, etc., as well as the Human Machine Interface (HMI), design of charging stations and choice of plug types.
- Variation in pricing was identified: some charging sessions were free, some stations indicated the price immediately and in some others, where a roaming card was used, the price was only communicated afterwards.
- In most cases access was not a problem due to low usage level of the charging stations. But with increased use of electric vehicles, this is likely to change. To this end, long waits or diversions to alternative stations will be increasingly necessary, unless infrastructure keeps up with demand.

The final analysis is underway and is expected to assess the issues encountered with different types of charging station, including the time taken to initiate the charge (understanding the instructions, accessing the service, etc.). In 2019, a longer test drive is foreseen to test the NeMo Hyper-Network and measure the actual improvements from its usage.

ERTICO – ITS Europe is one of the 19 NeMo partners and leads the project's dissemination and communication activities. ERTICO also participated in the test drive described above. NeMo contributes to ERTICO's innovation and deployment projects contributing to Clean Mobility (see <http://ertico.com/projects-categories/projects/>).

Editor notes

NeMo addresses the issue of limited driving range of Electric Vehicles (EVs) and the interoperability of charge points. It aims to make electromobility (*definition: www.techopedia.com/definition/30913/electro-mobility-e-mobility*) more attractive, focusing on seamless interoperability of charging and other electromobility services. It will apply to electromobility services the concept of inter-operator and international roaming (as in mobile telecommunications).

Specifically, NeMo is creating a Hyper-Network of tools, models and services to create an open, distributed and widely accepted ecosystem for electromobility. This will allow charging points, roaming operators, the electricity grid, system operators and service providers, vehicles and their owners/drivers to connect with each other in order to exchange data and to provide electro-mobility ICT services in a fully integrated and interoperable way.

The project will facilitate increased service availability, better planning and more secure electric grid operation, by making backend data and services accessible to the right actors and bringing down digital and physical barriers. An Open Cloud Marketplace will permit different service providers to reach a greater audience and enable better seamless services for users.

NeMo will boost the market share of electric vehicles by enabling increased accessibility to charging infrastructure, ICT services and wider B2B interconnectivity.

The project started in October 2016 and runs for 3 years, until September 2019. It includes 19 partners representing the automotive, research, software, operator, public authority and energy sectors. NeMo is co-funded by the Horizon 2020 Research and Innovation Programme of the European Union (grant agreement no. 713794).

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2. Ajuntament de Barcelona (City of Barcelona), Spain
3. Broadbit Energy Technologies, Slovakia
4. Centro Ricerche FIAT - CRF, Italy
5. ERTICO – ITS Europe, Belgium
6. fka - Forschungsgesellschaft Kraftfahrwesen Aachen -, Germany
7. Groupement pour l'itinérance des Recharges Électriques de Véhicules - GIREVE, France
8. HUBJECT, Germany
9. IBM Deutschland, Germany
10. Consorzio Interuniversitario per l'Ottimizzazione e la Ricerca Operativa - ICOOR, Italy
11. IDIADA Automotive Technology, Spain

12. IREN, Italy
13. Renault, France
14. SingularLogic, Greece
15. Technische Universität Berlin - TUB, Germany
16. Tecnositaf, Italy
17. TOMTOM Development, Germany
18. Verbund Solutions, Austria
19. Mosaic Factor, Spain

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