NeMo
Hyper-Network for ElectroMobility
Dr. Evangelia Portouli,
Senior Researcher
Institute of Communication and Computer Systems
NeMo at a glance

• **Call identifier:** H2020-GV-2015
• **Topic:** GV-8-2015 Electric vehicles’ enhanced performance and integration into the transport system and the grid
• **EC funding:** € 7.8 million
• **Duration:** October 2016 – September 2019
• **19 partners**
• **5 test sites & 1 cross-country demonstration**
• **Coordinator:** ICCS (Institute of Communication and Computer Systems), Greece (Dr. Angelos Amditis, a.amditis@iccs.gr)

Website: http://nemo-emobility.eu

Join us at:

LinkedIn NeMo_Electro  🐦 @NeMo_Electro
What are the challenges?

- Limitation in Electric Vehicle range
- Lack of interoperability in electromobility services
- Diverse eRoaming platforms
- Impact to the Electric grid network
- Lack of common data exchange and commercial framework
NeMo’s approach

Develop a **Hyper-Network of tools, models and services**, which will enable the provision of **seamless and interoperable electromobility services** creating an open, distributed and widely accepted ecosystem for e-mobility.

- **improved accessibility to charging infrastructure and ICT services through a **pan-European Inter-Roaming framework**
- facilitate increased availability, better planning and more secure electric grid operation
- create business opportunities (increased B2B connectivity)
NeMo’s strategic objectives

- **Common Information Models**
- **Standard ICT interfaces**
- **Core system** for provision of ICT services
- **Horizontal services**
- **Open APIs** that will enable an **open B2B cloud Marketplace** for electromobility
- **Services** self-certification mechanism
Expected impact

• Enhanced driver satisfaction: “Charge anywhere & anytime” across Europe via a single identification, authorisation & payment method

• Easy creation and delivery to a wide audience of innovative, interoperable electromobility services via an open cloud marketplace

✓ Improved attractiveness of electric vehicles

✓ Facilitation of EVs mass adoption
Expected impact

• Enable **Information exchange** among all involved actors

• **Integration of smart-grid applications and services**, to support the EVs integration in the electricity grid, by optimisation of electricity supply compared to demand
Planned NeMo services

Horizontal Hyper-Network services:
- Electromobility actors’ monitoring and profiling
- Finder and optimiser
- Brokerage
- Service pricing (static and dynamic)
- Smart navigation and journey planning
- Wireless authentication solution
- Navigation to Charging Point based on user and grid requirements
- Global customer charging behaviour
- Grid load management
- Load forecasting due to EV charging
- Local energy management
- Adaptive State-of-Charge limit
- Capacity calculation; Load management; etc.

EV driver / owner services:

Grid related services:
NeMo Common Information Models

- One of the pillars of NeMo Hyper-Network is the possibility to exchange data using a common NeMo meta-language

- Common Information Models (CIM)

- Data translators and common interfaces

- Smart Processing and Data Management algorithms
NeMo Inter-roaming protocol

The NeMo Inter-Roaming protocol is a functional protocol that enables:

- the direct communication between eRoaming platforms
- publishing of eRoaming platforms’ services to the NeMo Hyper-Network, providing eRoaming features, like any other NeMo service.
Pan European eRoaming framework

- The Inter-roaming protocol contributes to the pan European eRoaming framework, by linking existing eRoaming platforms

- Current interfaces served:
  - POI handling (static and dynamic)
  - authorization processes
  - exchange of charge detail records (CDRs)

Functional architecture, enabling visibility of other’s platforms connected actors
NeMo Hyper-Network

Common data-set stored in distributed databases / Ledger
All participants have access to same data
Nemo Nodes operated by Business partners

NeMo Business Network

- Shared distributed Database / Ledger:
  1. Partner Management
  2. Services Marketplace
  3. Contract Management

Nemo Nodes operated by Business partners:

- GIREVE Node
- MOSAIC FACTOR Node
- CRF Node
- IBM Node
- VERBUND Node
- DSO #A Node
- Trustee Service Provider
- FIAT
- Renault
- Charge Point Operator (CPO)
- CPO
- ITSP
- 3rd Party Service Provider
- Electro Mobility (service) Provider (EMP)
- CPO
- EMP
- CPO
- Gireve

NeMo Hyper-Network

ITS World Congress, SIS 67, 20 September 2018
NeMo testing activities

• **Five test sites** across Europe to evaluate the results

- **Spanish Test Site**
  - Local Interoperability
  - Horizontal services
  - Booking service

- **French Test Site**
  - eMobility Report
  - Vehicle preconditioning

- **German Test Site**
  - Capabilities of NeMo Hyper-Network

- **Austrian Test Site**
  - Smart charging services
  - Grid services

- **Italian Test Site**
  - Itinerary planning considering security features
NeMo testing activities

• Cross-country demonstration test drive in 2019
  – Evaluation of the post-NeMo situation for real users
  ✓ Itinerary Planning
  ✓ Cross-provider border booking authorization and payment management
INVITATION TO NEMO

✓ JOIN the NeMo Stakeholder Forum
  • Register via https://nemo-emobility.eu/nemo-forum/ or the NeMo LinkedIn group
  • Remain updated on all project news, results and events
  • Register your interest in joining the Hyper-Network as a developer, provider or user of services.

✓ ATTEND the 2nd Stakeholder Forum Conference on 10 October 2018, in Brussels
  • Learn about the latest developments, experience the Hyper-Network, provide feedback.
  • Learn about the Business Alliance for Electro-Mobility (BAEM) and what you can gain from it
  • Join us in setting up the BAEM as a founding member, to enjoy all opportunities offered by the Hyper-Network

✓ PARTICIPATE in the upcoming NeMo Hackathon and Webinars ➔ Early 2019
  • Contribute to the optimisation of the Hyper-Network Tools and Service Creation Environment;
2ND STAKEHOLDER FORUM CONFERENCE

Don’t miss the opportunity to join us!

Save the date!

NeMo Stakeholder Forum Conference
Brussels, 10 October 2018

>>> Register now for free & Read the draft agenda <<<

at: http://nemo-emobility.eu/
Thank you for your time!

Dr. Evangelia Portouli
ICCS
v.portouli@iccs.gr