# EMobility strategy & charging solutions worldwide

1ª Conferência sobre Veículos Inteligentes

Sistemas de propulsão eficiente.

29 de Novembro 2018

## WHAT IS INTEROPERABILITY?

## WHAT DO YOU NEED TO MAKE A PHONE CALL THROUGHOUT EUROPE ?

1 Contract

1 Sim

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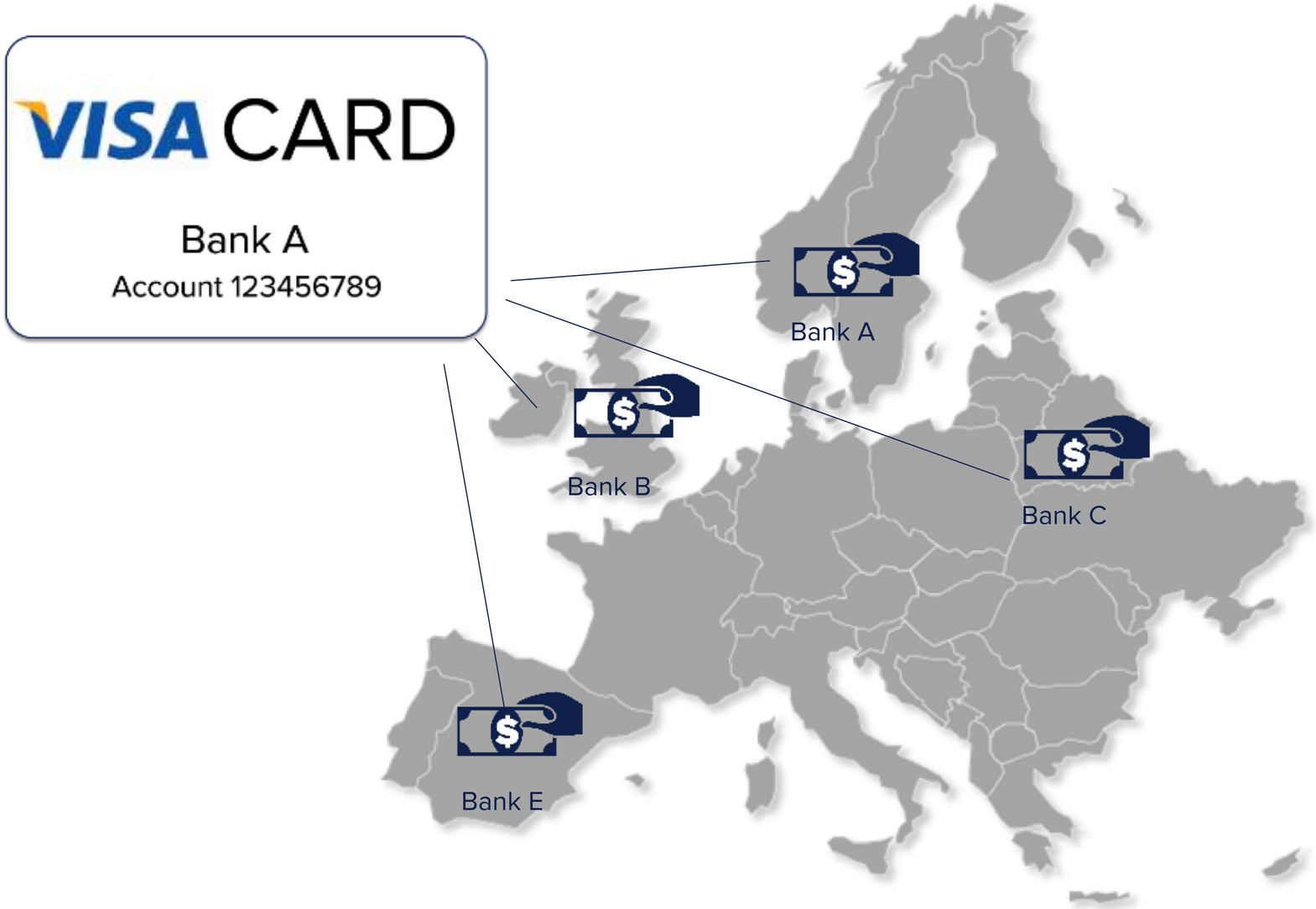


# HUBJECT IN A NUTSHELL

HUBJECT

Europe's leading eRoaming / interoperability platform with the mission to digitally connect charge point operators (CPOs) with emobility providers (EMPs)

intercharge
Extend your reach.

FUNCTIONAL BRAND
INTERCHARGE

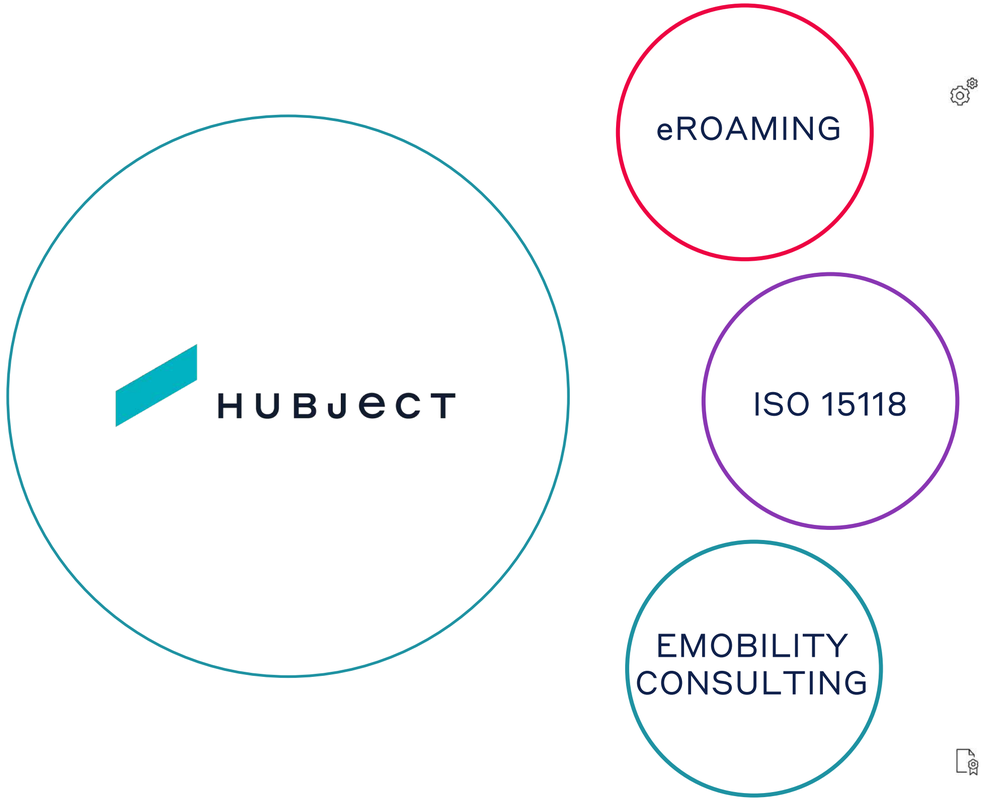
## VISION

Seamless EV charging for everyone. Everywhere.

## SHAREHOLDERS

BMW Group · DAIMLER · BOSCH · EnBW · SIEMENS · innogy · Volkswagen

# HUBJECT'S BUSINESS LINES




Profound cross-industry know how of the EV market from more than 100 IT projects

Constantly growing partner network with more than 300 international B2B partnerships in the emobility sector

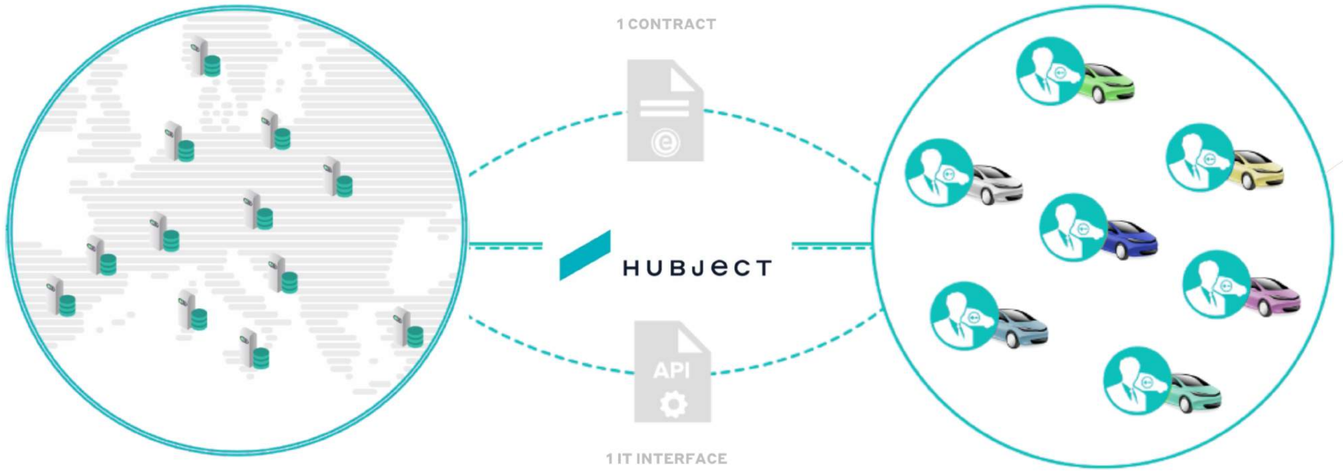
International team with backgrounds and profound expertise across the fields of IT, automotive, energy and consulting

Sound experience in consulting and methodical knowledge from numerous strategy and consulting projects

Innovation leadership through constant development of digital and innovative EV value added services

100% digital platform with a proven IT and business framework and the strong intercharge brand

# EMP: ENABLING EV DRIVERS TO CHARGE ACROSS OPERATORS AND BORDERS WITHIN EUROPES LARGEST EMOBILITY NETWORK

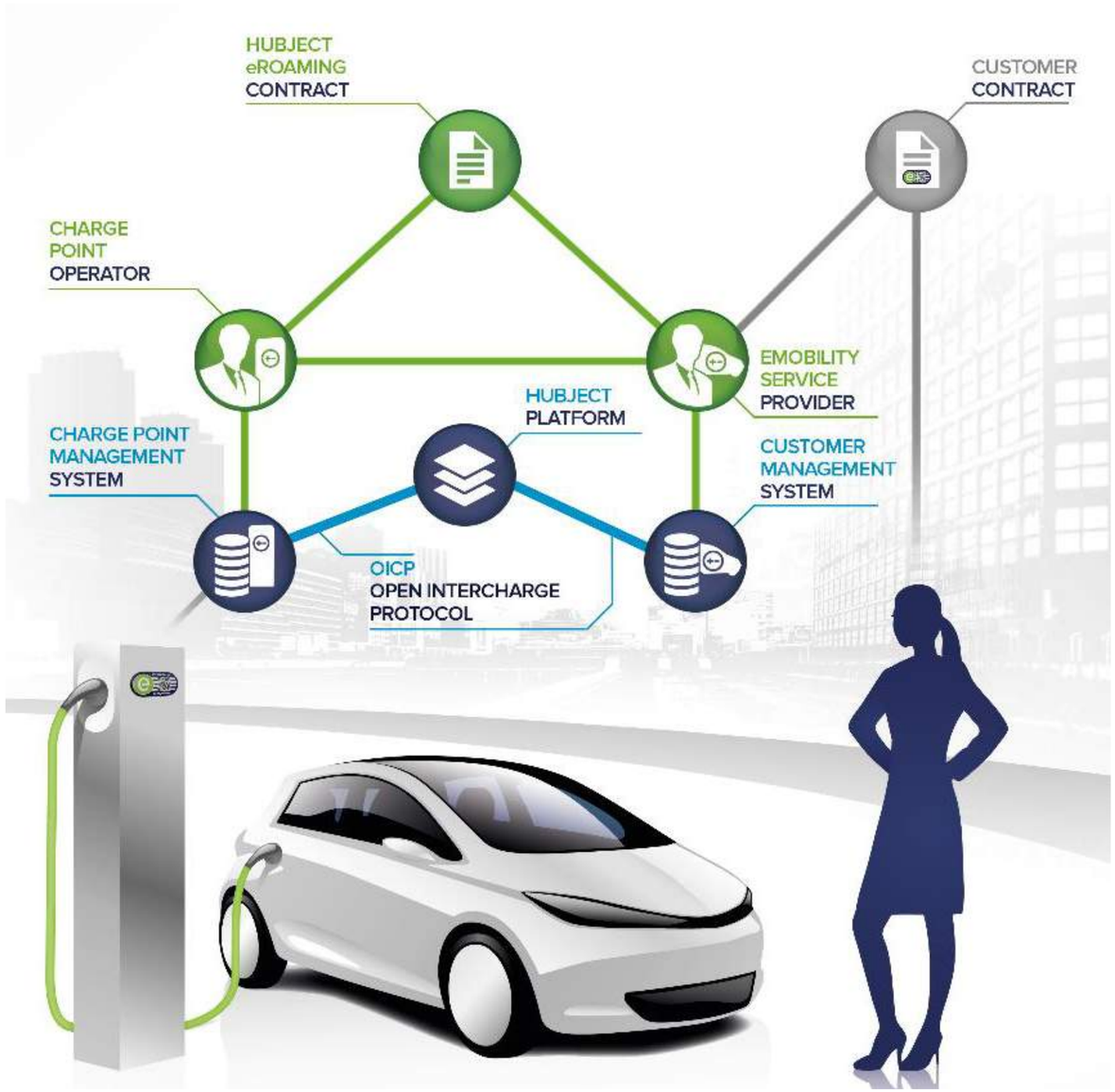



25.000 charge points
across 28 countries

## EMOBILITY SERVICE PROVIDERS

- Mobility providers
- OEMs
- Telecommunication
- App developers
- Card providers
- Banks
- ...

# OPEN YOUR CPO-NETWORK THROUGH 1 UNIQUE TECHNICAL INTEGRATION & 1 UNIQUE CONTRACT



# HUBJECT'S EUROPEAN CHARGING NETWORK COUNTS OVER 300 PARTNERS AND 25.000 CHARGING POINTS

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# THE PREREQUISITES OF AN EFFICIENT AND INTEROPERABLE CHARGING INFRASTRUCTURE

## Interoperability

## Pre-requisites

Acceptance of other Emobility service providers‘ contracts

Exchange of POI-Information

Preparation of the certificate-based use of charging stations (ISO15118), as possible follower of RFID-Card

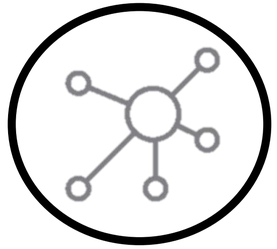
Acceptance, access and secure transmission of information between the back-end system of the charging point operator and the back-end of the Emobility Service Provider

Transmission of static and dynamic POI-Datas

# COMPLIANCE WITH EU DIRECTIVE AFI 2014/94*

**Open charging infrastructure**
supporting remote Start&Stop with Ad-hoc charging and supporting all contracts from other Emobility service providers

**Interconnected and intelligent infrastructure**
through the transmission of dynamic POI- & contract datas, customer-friendly search of available charging points, transparent billing, preparation of Plug & Charge-Technology (according to ISO15118)



**Connexion to an eRoaming-Platform**
For an efficient access to all Emobility Service providers for the charging stations.



*http://eur-lex.europa.eu/legal-content/FR-ES/TXT/?uri=CELEX:32014L0094&from=FR

# EXPERTISE IN INNOVATION AND SUBSIDIZED PROJECTS

HUBJECT

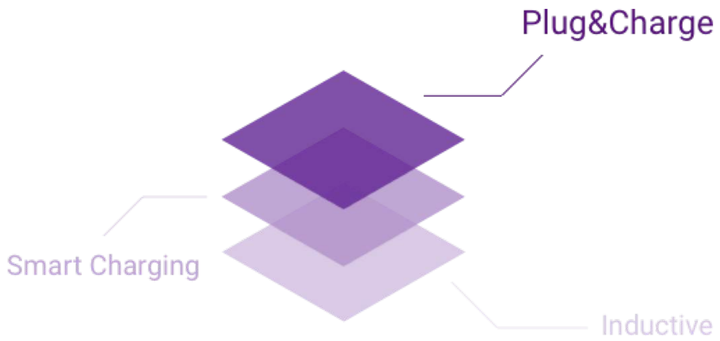
3-year EC funded project (7,8 M€) until 2020 to foster adoption of electro-mobility by motorists and road transport operators settling common frameworks, commercial agreements leading to the NeMo Hyper-Network.

Largest EV infratructure deployment project funded by EC for 307 multi-standard-fast chargers of major roads in Belgium, Germany, Czech Republic and Slovakia.
Total investment of 17,6 M€. Completion date: June 2017.

Deployment of a pilot of 25 ultra-fast chargers (150-300 kW) on TEN-T Corridors (connecting Netherlands, Belgium, Germany and Austria), a market and business model analysis to define a EU roll-out plan from the pilot.
Total invesment of 13 M€ (50% EU). Completion date: Dec 2018.

## The standard defines:

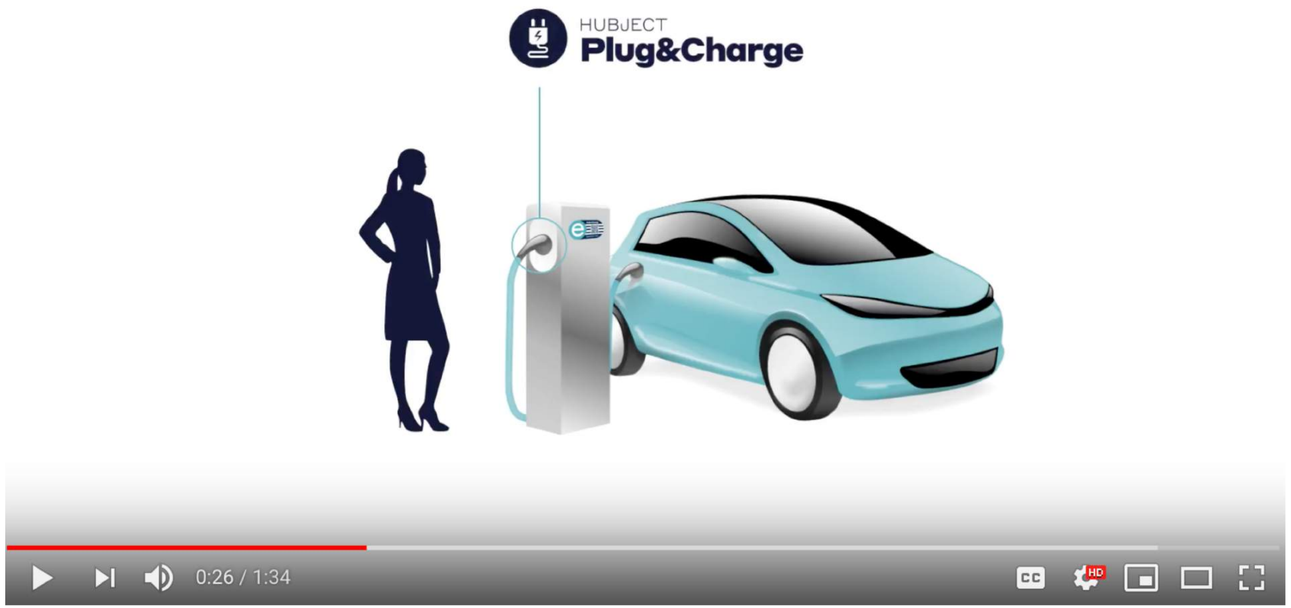
- Interfaces for Plug & Charge; automated and secure data exchange between electric vehicles and charge point infrastructure for the access to charge points without an additional third medium (smartphone or RFID card)
- Integration of electric vehicles into the energy grid (smart charging)
- Additional use cases (e.g. inductive and bidirectional charging) and information flows of charging and transaction processes



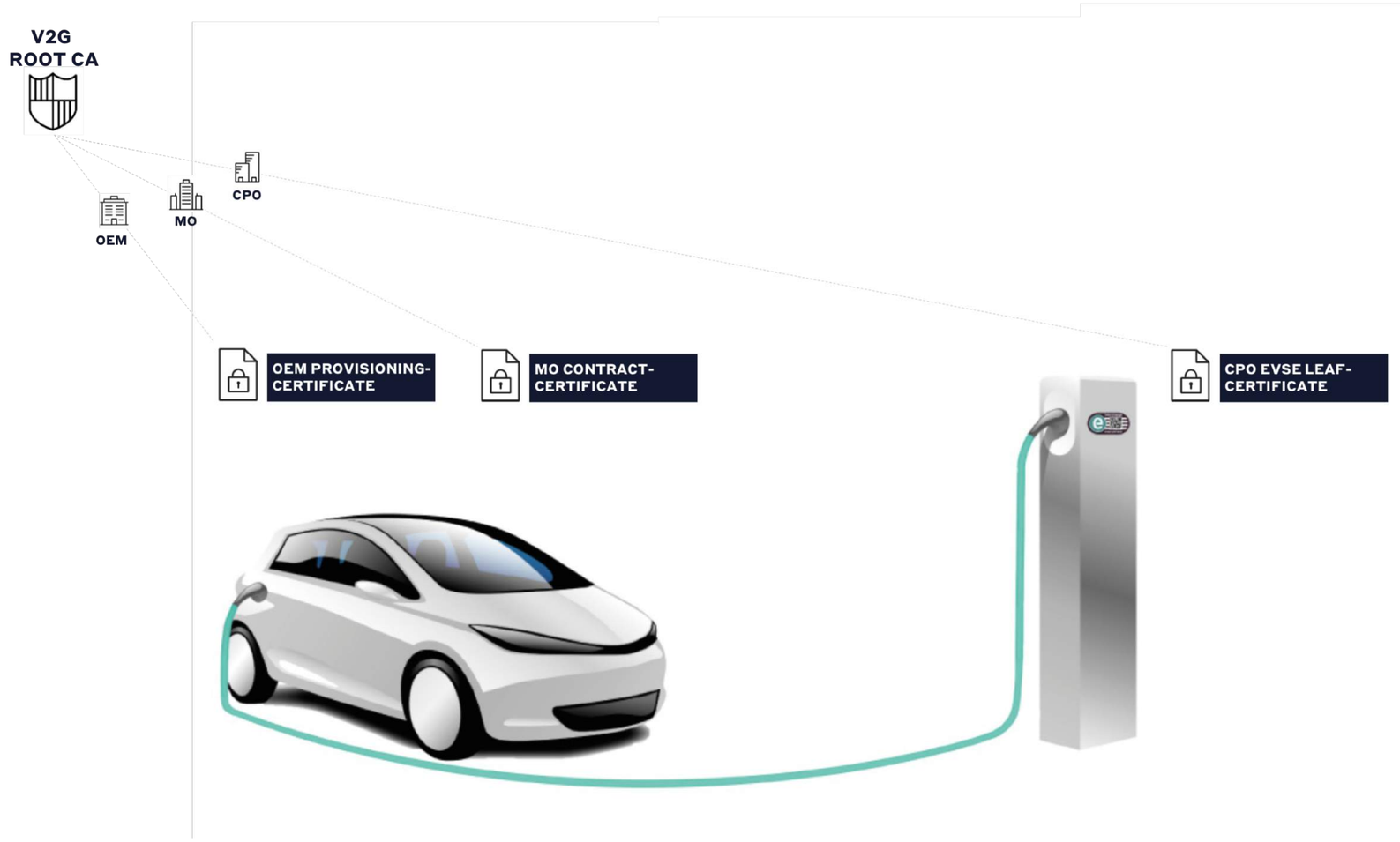

### BENEFITS :

- More convenient charging experience for the EV driver
- High degree of security: Secure data exchange due to certificate-based communication; additional lettering of messages reduces the risk of fraudulent use
- Lower operational costs due to technological standardization: coherent processes, data formats and interfaces
- Adaptation capability of the energy grid load

# THE PLUG & CHARGE TECHNOLOGY; AUTOMATED AND SECURE DATA EXCHANGE BETWEEN ELECTRIC VEHICLES AND CHARGE POINT INFRASTRUCTURE



# THE V2G ROOT CA OPERATED BY HUBJECT TAKES ALL RELEVANT ROLES OF THE ISO 15118 ECOSYSTEM



# IN ORDER TO ENABLE A SECURE END-TO-END COMMUNICATION PROCESS, A JOINT POSITIONING OF ALL PLAYERS IS NECESSARY

**OEM**

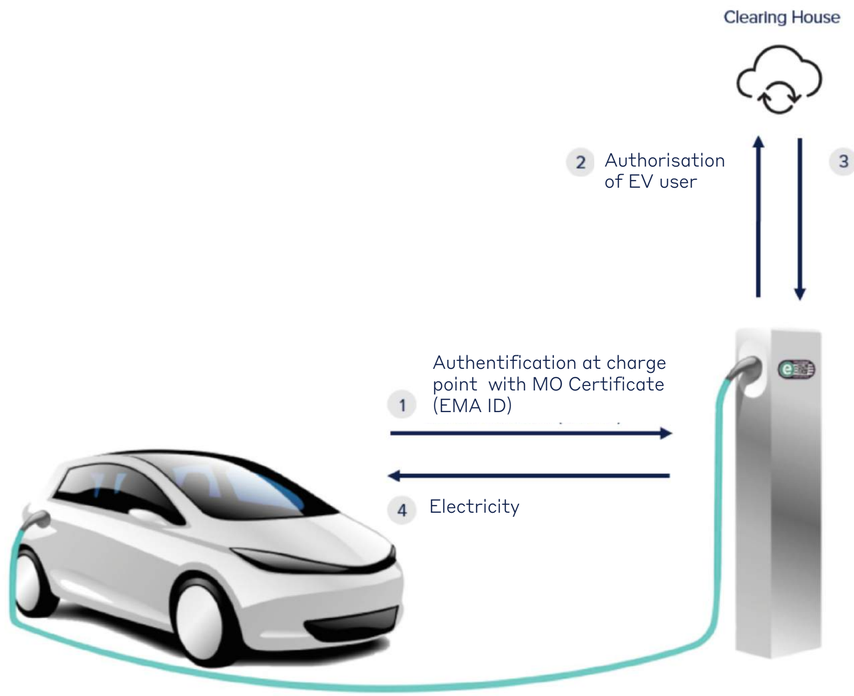
Provisioning Certificates

For a secure communication between EV, charge point and backend system

**HUBJECT**

Certificate Authority

First commercial Root CA – ISO 15118 is already part of the eRoaming protocol OICP




**MO**

Contract Certificates

For a secure communication of user data

**CPO**

EVSE Leaf Certificate

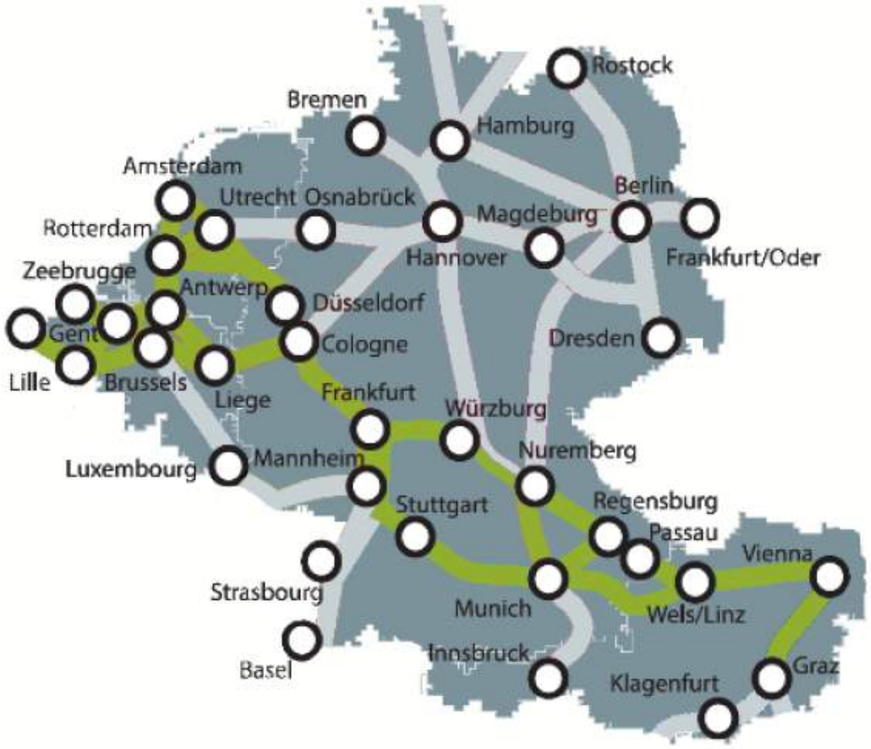
For an automated authentification process between EV and charge point

## OEMS CONFIRM ISO 15118 AS A PROTOCOL THAT THEY PLAN TO USE

| EV OEMs | AC conductive | DC conductive | Wireless Inductive |
|---|---|---|---|
| BMW | ISO 15118 ( HomePlug Green PHY) | ISO 15118 ( HomePlug Green PHY) | ISO 15118 |
| Fiat Chrysler | IEEE 2030.5 | ISO 15118 ( HomePlug Green PHY) | WiFI , 15118 Ed. 2 |
| Ford | Telematics & ISO 15118 (future) | ISO 15118 ( HomePlug Green PHY) | ISO 15118 Ed. 2 |
| GM | No High Level Communication | DIN Spec, no timeframe for ISO/IEC | WiFI and telematics |
| Honda | TBD, High Level Communication | DIN Spec / ISO 15118, V2G | Premium product |
| Lucid | ISO 15118 ( HomePlug Green PHY) | ISO 15118 ( HomePlug Green PHY) | In development |
| Mercedes Benz | ISO 15118 ( HomePlug Green PHY) | ISO 15118 ( HomePlug Green PHY) | J2954 / ISO 15118 |
| Nissan | Telematics | ChaDeMo | In development |
| Porsche / Audi / Volkswagen | ISO 15118 ( HomePlug Green PHY) | ISO 15118 ( HomePlug Green PHY) | ISO 15118 (In development – 2018) |

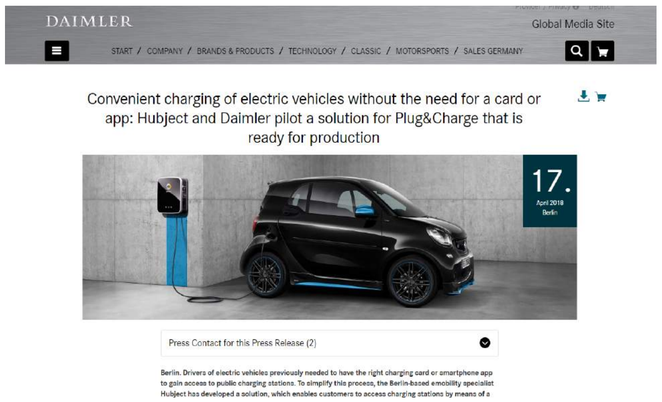
Source: California Public Utilities Commission, 2017

# THE EU CO-FINANCED ULTRA-E PROJECT WILL PROVIDE PLUG&CHARGE AT ALL 25 ULTRA-FAST CHARGING STATIONS




- The 25 ultra-fast charging locations are being built along a corridor in four European countries
- From Amsterdam and Brussels via Munich to Vienna and Graz
- First-time 100% electric long distance driving in Europe
- The total length of the covered corridor is more than 1,100 km
- All locations will be equipped with **Plug&Charge according to ISO 15118**

# THE PIONEERING PLAYERS ARE IN A PILOTING PHASE – DAIMLER REALIZED THE FIRST IMPLEMENTATION OF PLUG&CHARGE VIA ISO 15118


DAIMLER

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Convenient charging of electric vehicles without the need for a card or app: Hubject and Daimler pilot a solution for Plug&Charge that is ready for production

17.
April 2018
Berlin

Press Contact for this Press Release (2)

Berlin. Drivers of electric vehicles previously needed to have the right charging card or smartphone app to gain access to public charging stations. To simplify this process, the Berlin-based emobility specialist Hubject has developed a solution, which enables customers to access charging stations by means of a

Source: Daimler, April 2018

- Hubject successfully supported Daimler and Ebee with the implementation of the **needed IT security** to ensure **end-to-end secure communication**
  - A first **end-to-end pilot** implementation on the OEM and hardware side was successfully executed, of which the **results will be leveraged** in future implementations
  - Hubject provided **certificate management** and **PKI** implementation consultancy **for both Daimler and Ebee**
- **Project Management** and consultancy along the full implementation

# THANK YOU FOR YOUR ATTENTION !

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