

# Interoperability of E-Mobility Services - Requirements from an OEM Point of View



## EVS27 Conference Session 2F2 - ICT and promotion

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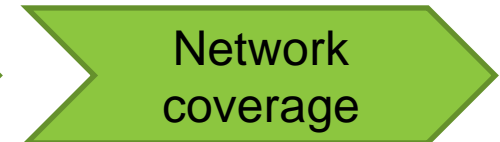
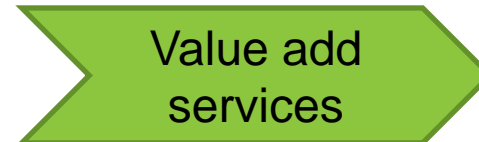
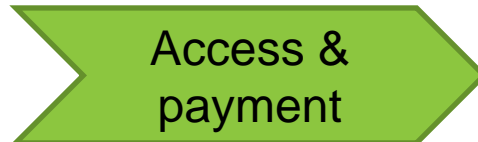
# Interoperability of E-Mobility Services: Challenges for EVs & Comparison with fossil fuel infrastructure



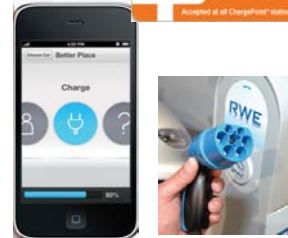
Gasoline: EN228 ✓  
Diesel: EN 590 ✓

(Navigation Services;  
Low relevance with  
respect to refueling)

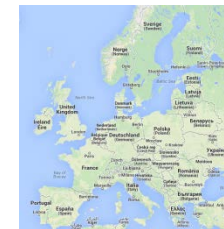
>130,000 stations  
(EU wide) ✓



AC	DC
 Typ 1	 Combo 1
 Typ 2	 Combo 2
 Typ 1	 CHAdEMO
 Typ 2	 Typ CN DC



Navigation Services  
Reservation  
Eco-Routing  
...



< 10,000 charging points

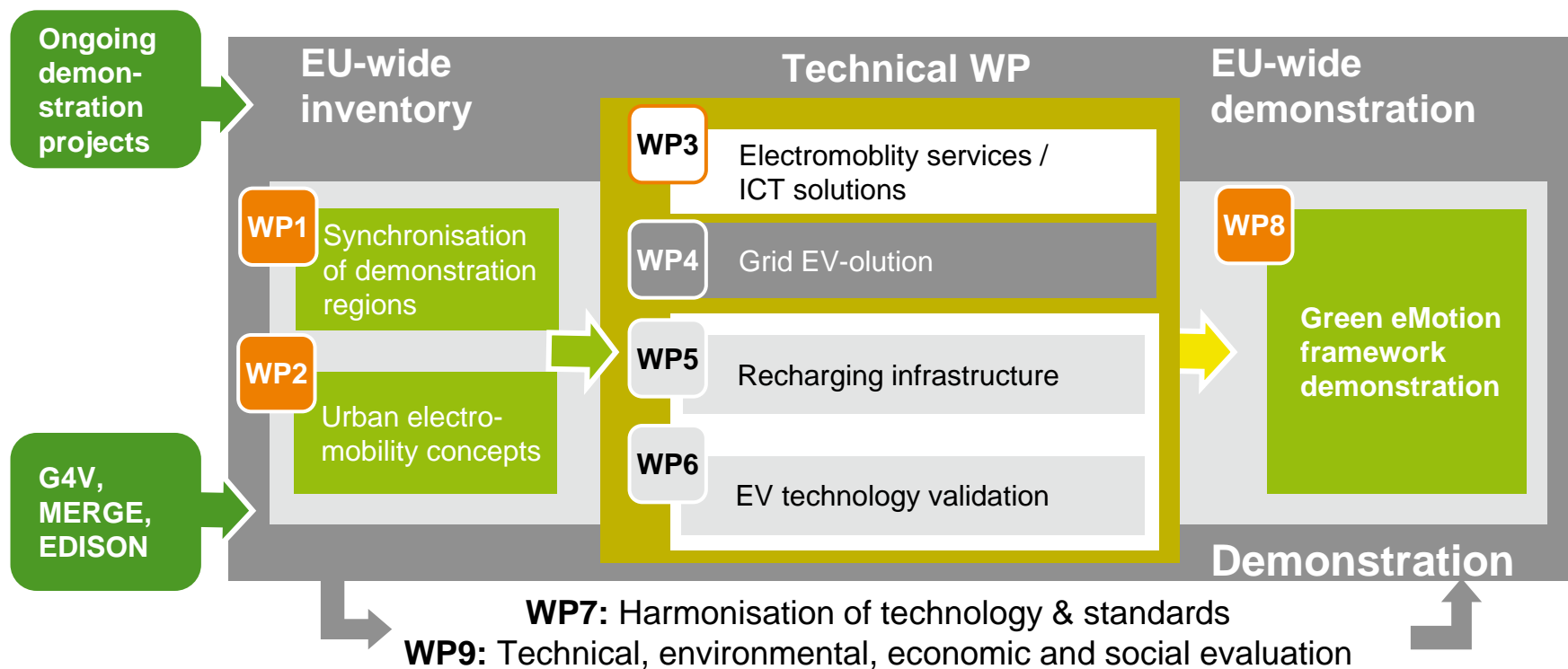


# Green eMotion Work structure.

All WPs deliver contributions towards task of „Interoperability“



## Administrative WP – Dissemination (WP10), Project Management (WP11)



**Subject:** Integrated European demonstration on electro-mobility –  
Vehicles, infrastructure, grid, IT applications, user acceptance

# Overall OEM Requirement: convenient customer experience

## Sub-Requirements to different Green eMotion Workpackages.



### Vehicle interface

- Standardized connection EV/ EVSE (plug & communication) → WP5,7
- Variety of power levels to support different use cases in the most customer attractive way → WP5
- Holistic architecture, interfaces to OEM/ EVSP Backend → WP3,7

### Access & payment

- e-roaming functionality (end user can charge everywhere with one contract) → WP3,8
- Viable business model (Attractive, transparent pricing & invoicing) → WP3,9
- Easy access & handling → WP3

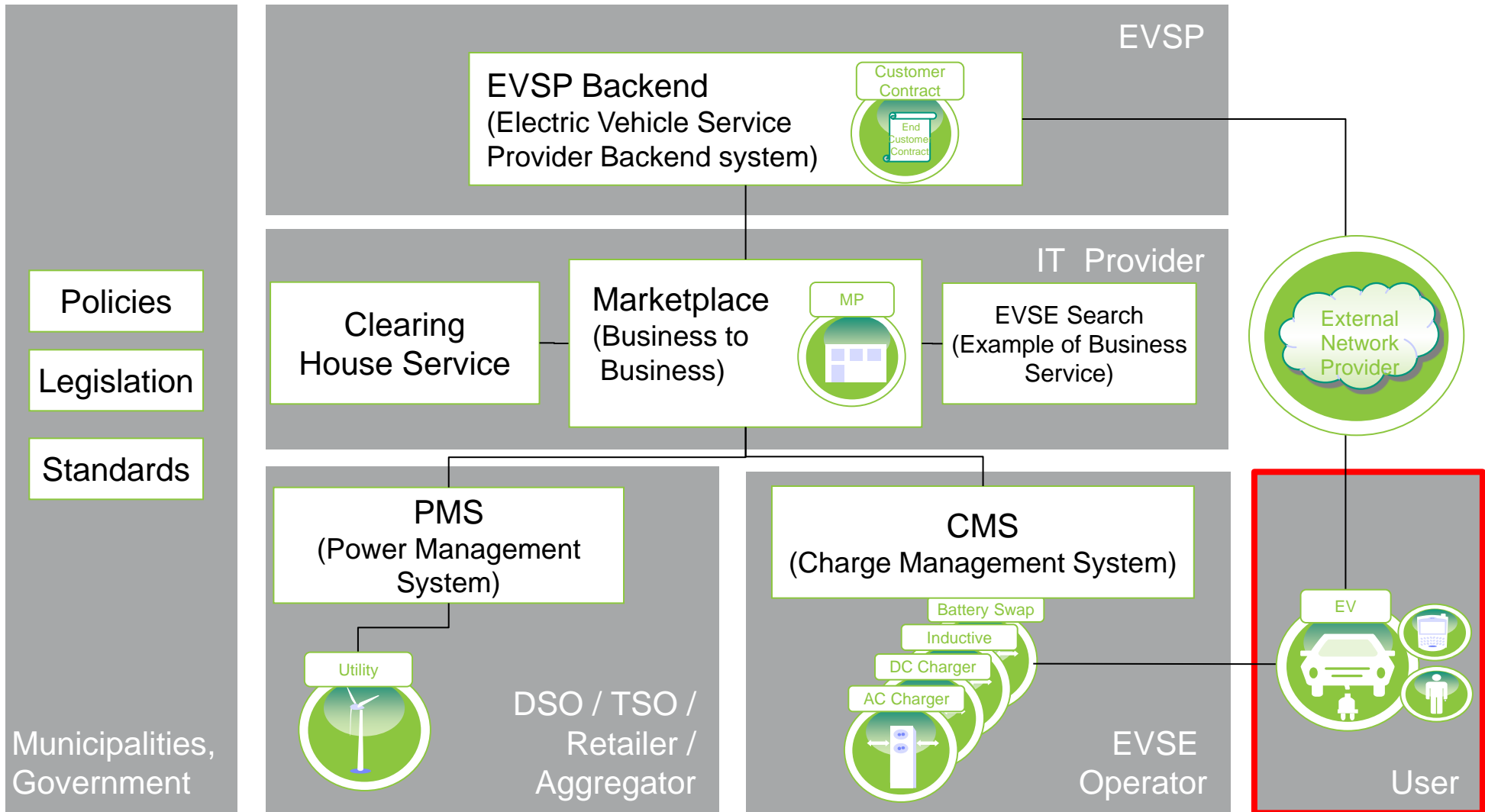
### Value add services

- Navigation to Charging Spots → WP3
- Dynamic Info/ Reservation of Charging Spots → WP3,8
- Enhanced Charging acc. to user preference (e.g. green or economic charging → grid stabilization is not an USP!) → WP3,4,5

### Network coverage

- Technical interoperability (e.g. Multi-Standard) → WP5
- Sufficient public network – where needed → WP10
- Integration in mobility/ intermodal solutions → WP1,2

# The architecture for solving the interoperability challenge: Green eMotion Building Blocks





# Marketplace for electromobility: OEMs are already offering services beyond the vehicle!



## BMW

- ChargeNow – Public Charging Offer
- EV Leasing & Fleetmanagement
- EV Carsharing

## Daimler

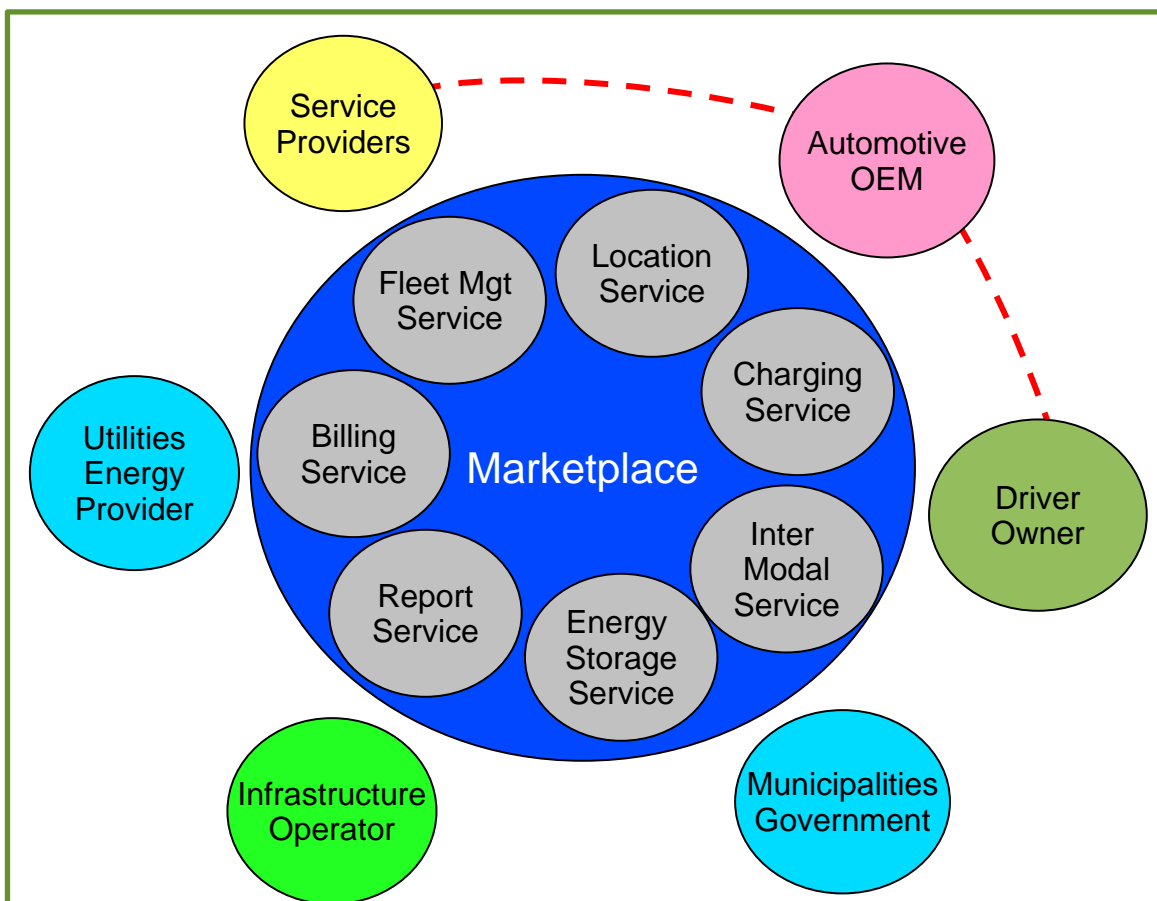
- EV Leasing & Fleetmanagement
- EV Carsharing

## Renault

- EV Leasing & Fleetmanagement
- Battery Leasing

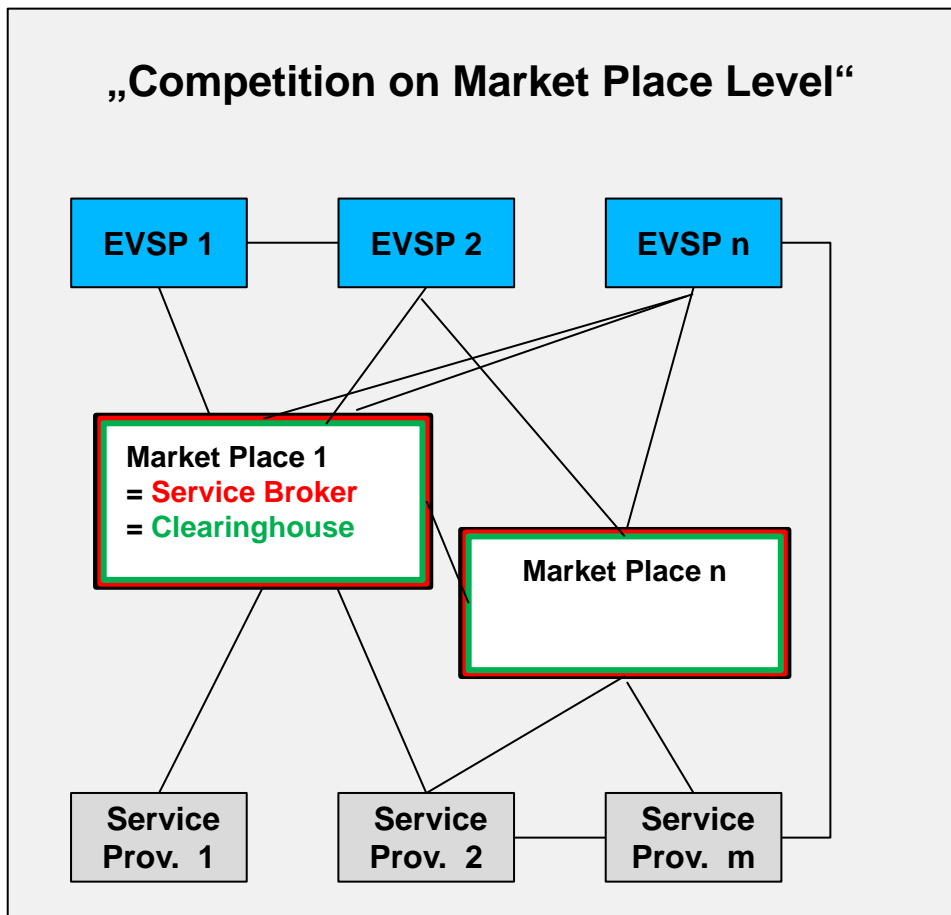
## Nissan

- EV Leasing & Fleetmanagement
- Battery Leasing



While in theory one single European Market Place would be the most efficient solution, actual development highlights the need for interconnected market places!

# Marketplace for electromobility: The need for interconnected market places



**GIREVE**



→ OEM Requirement: facilitate process of interconnection of market places asap!

# Electric Vehicle Service Provider (EVSP):

EVSP holds customer relation, must manage trade-off between positive business case versus attractive retail pricing



The EV driver has to pay for the services of all stakeholders inside the business model!

A REEV/ PHEV Driver has following fueling options\*:

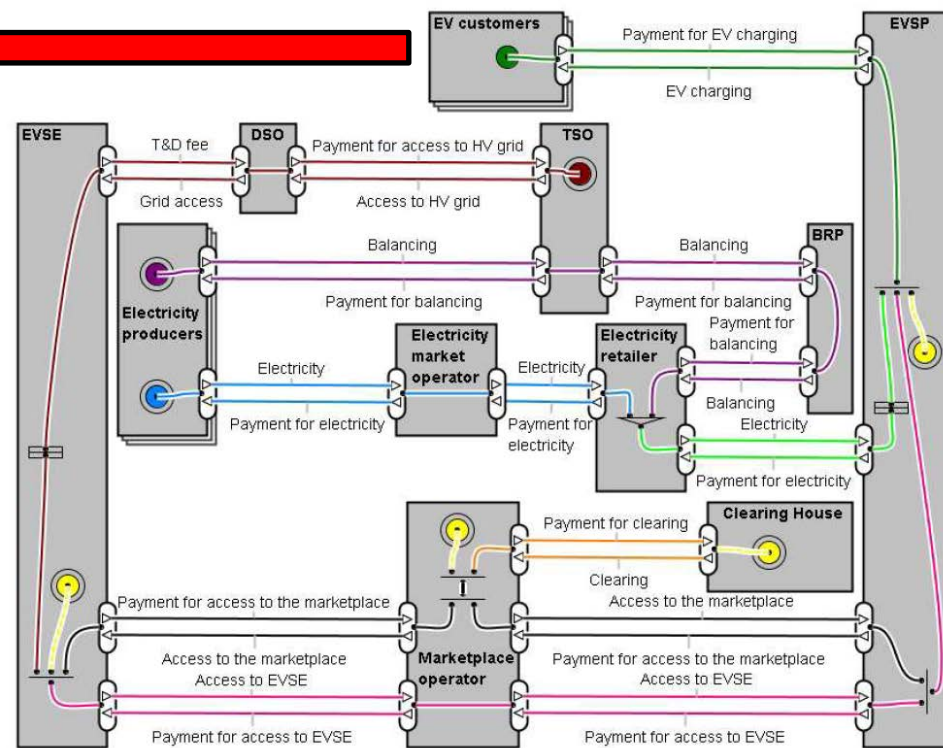
Charge @ home: ~15-25 ct/ kWh (EU-range)  
→ 1,80 – 3,00 €/ 100 km

Refuel with gasoline: ~1,50 €/ Liter  
→ 7,50 €/ 100km

## Conclusions:

- Reasonable amortisation for infrastructure use & eRoaming is possible
- “fossile cost per mile” as ceiling (REEV)

\* assumed consumptions: 12 kWh/ 100km, 5 liter gasoline/ 100 km



e<sup>3</sup>value model used in WP9.3

→ OEM Requirement: optimize business models, minimize end customer cost for usage of public charging infrastructure in addition to energy cost.



# Interoperability of E-Mobility Services: Next Steps



The Green eMotion automotive group proposes already a range of Electric vehicles and the portfolio is further growing ....



DAIMLER  
NISSAN

2010

2011

2012

2013

2014



Nissan LEAF



Renault Kangoo Z.E. /  
Kangoo Maxi Z.E



Renault Twizy



Renault ZOE  
Preview



Nissan eNV200



Mercedes B-Class ED



Renault Fluence Z.E.



Smart ED



BMW i3



BMW i8

The other E-Mobility stakeholder have to follow now!

# Thank you for your attention.



Contact:

[www.greenemotion-project.eu](http://www.greenemotion-project.eu)

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