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

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European Commission

COOPERATION

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)

Vehicle interface	Access & payment	Value add services	Network coverage

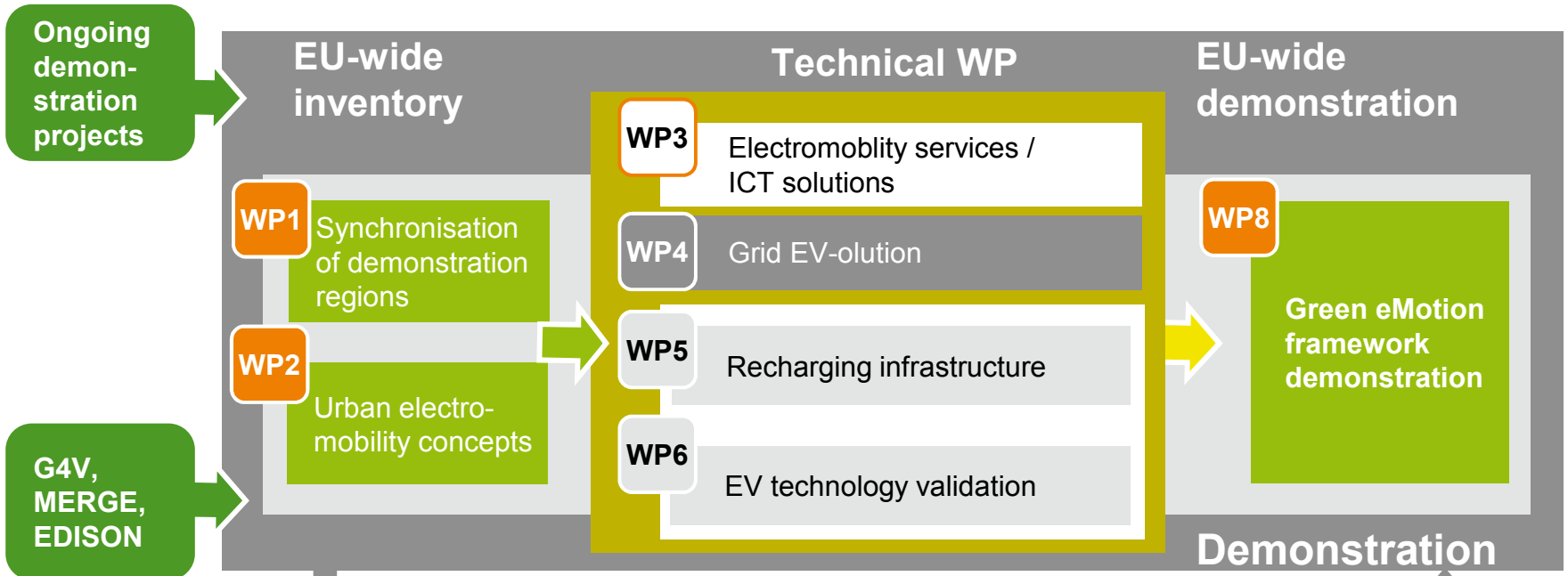
AC	DC
Typ 1	Combo 1
Typ 2	Combo 2
Typ 1 / Typ 2	CHAdeMO
Typ CN AC	Typ CN DC

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

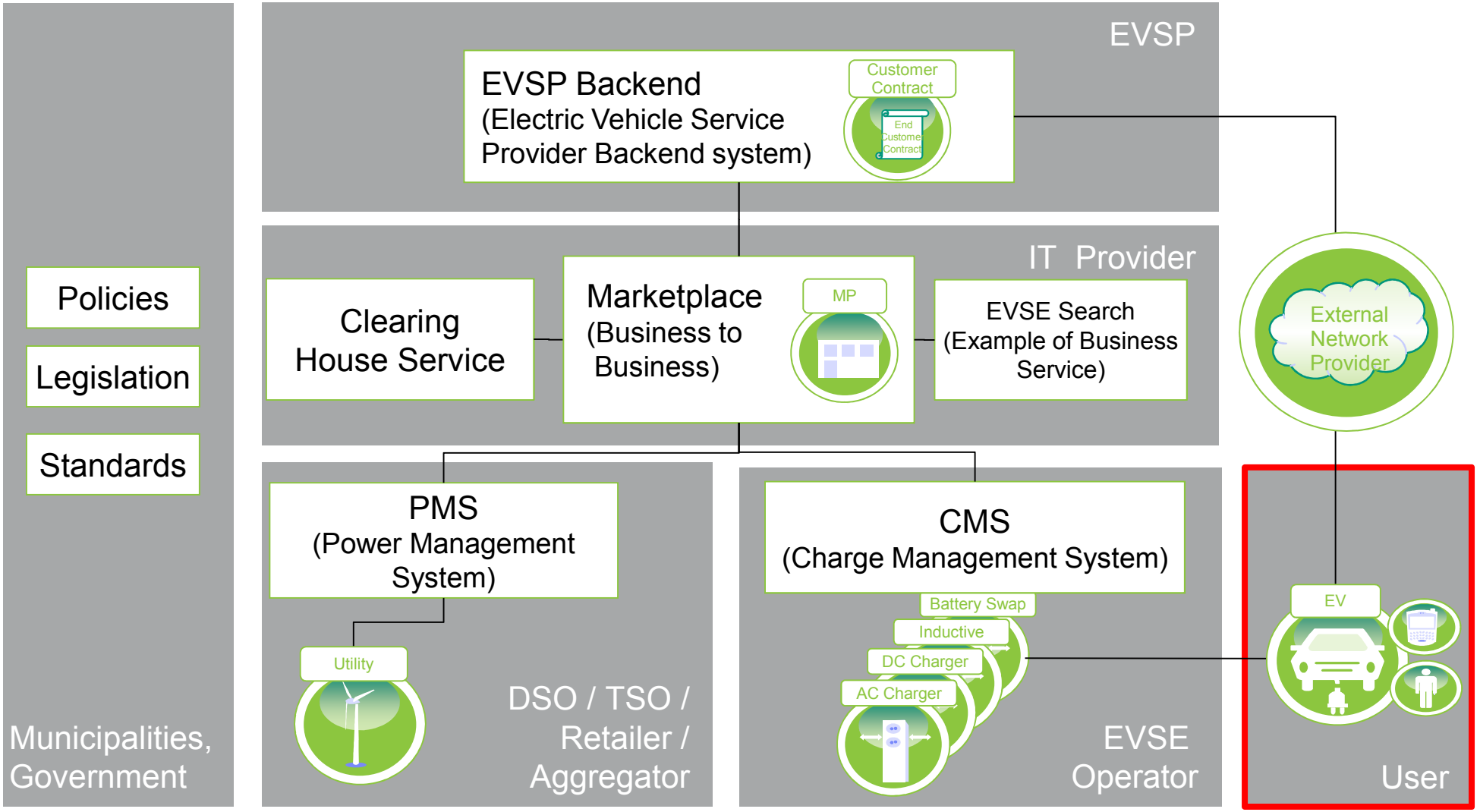
Value add services

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

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



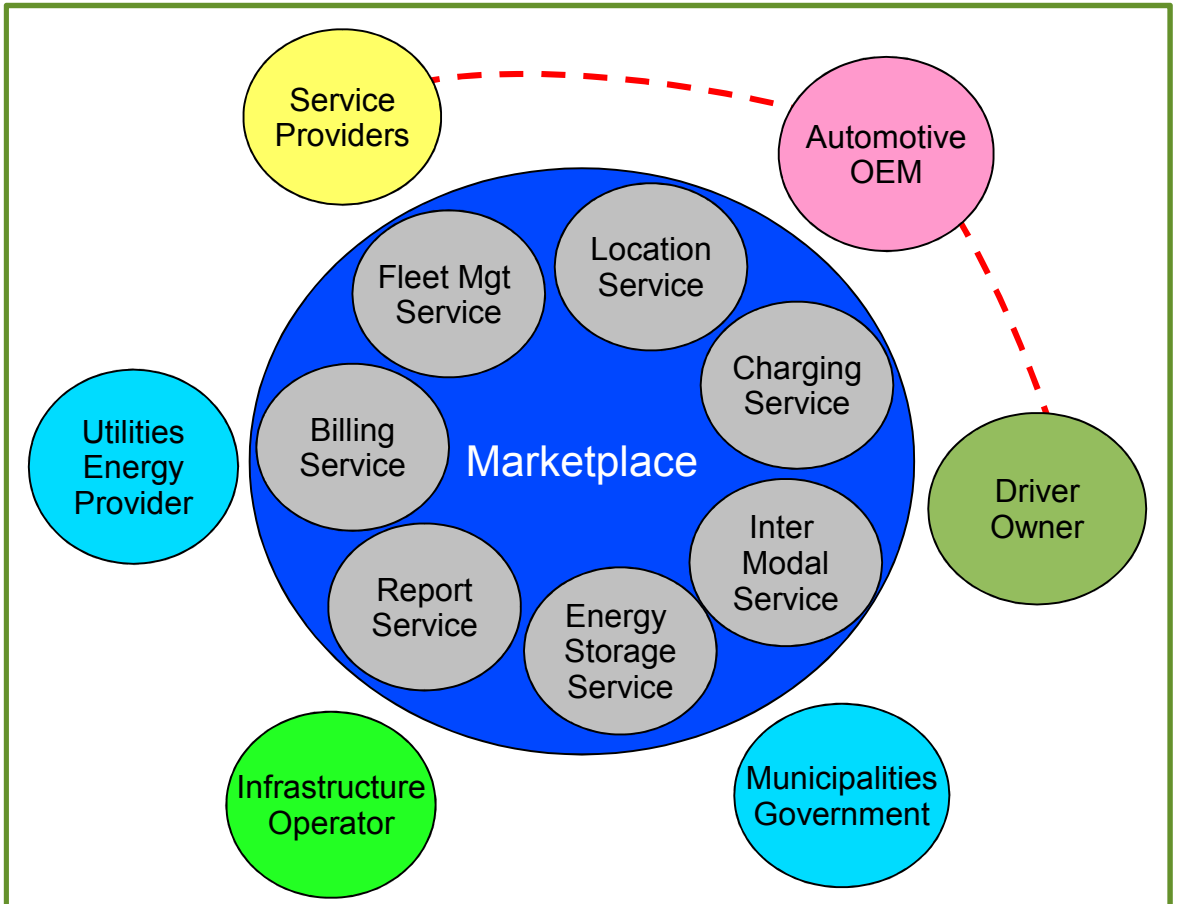
Marketplace for electromobility: OEMs are already offering services beyond the vehicle!

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

Daimler
- EV Leasing & Fleetmanagement
- EV Carsharing

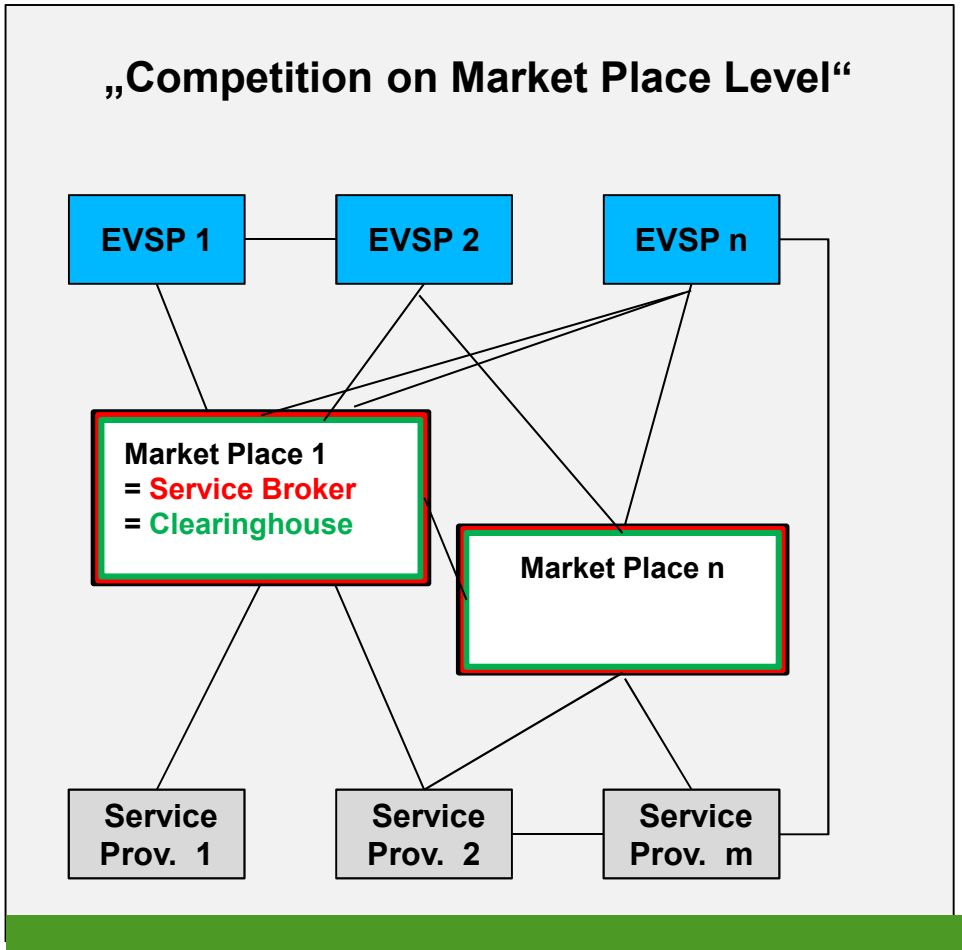
Renault
- EV Leasing & Fleetmanagement
- Battery Leasing

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



MOBI.E
MOBILIDADE ELÉCTRICA

e-laad.nl

intercharge everywhere
HUBJECT
connecting emobility networks

GIREVE

SMATRICS
Strom gibt Gas.

bluecorner
building a blue world

→ 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*:

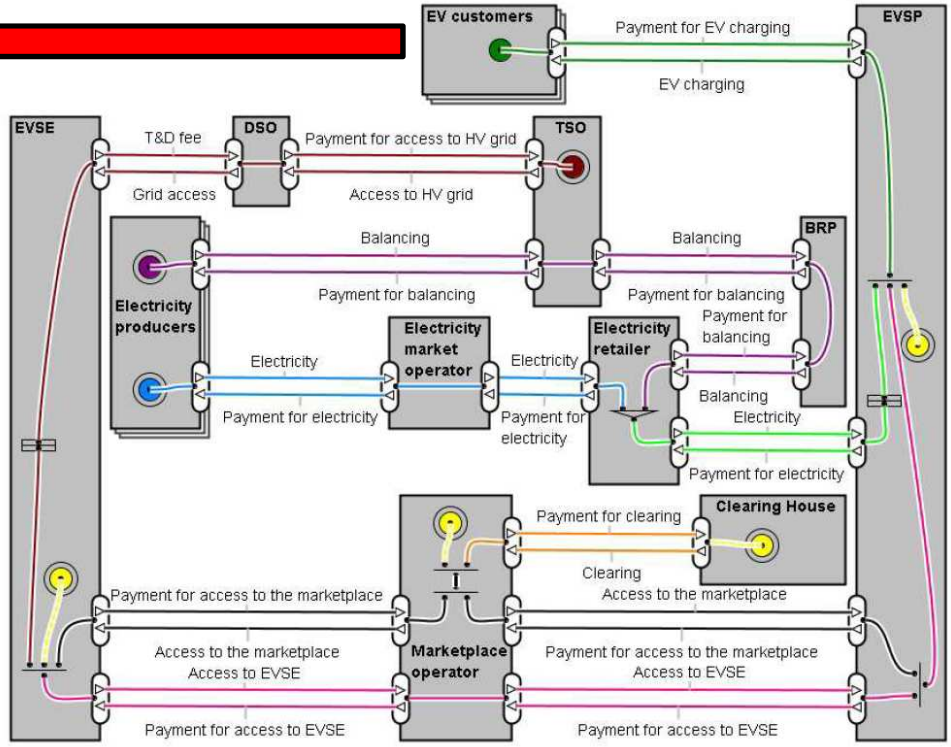
Charge @ home: ~15-25 ct/ kWh (EU-range)
→ 1,80 – 3,00 €/ 100 km

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



e³value 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 ….

2010	2011	2012	2013	2014
Nissan LEAF	Renault Kangoo Z.E. / Kangoo Maxi Z.E Renault Fluence Z.E.	Renault Twizy Renault ZOE Preview Smart ED	Nissan eNV200 BMW i3	Mercedes B-Class ED BMW i8










The other E-Mobility stakeholder have to follow now!

Thank you
for your attention.

Contact:

www.greenemotion-project.eu

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