



The 27th INTERNATIONAL  
ELECTRIC VEHICLE  
SYMPOSIUM & EXHIBITION.

Barcelona, Spain  
17th-20th November 2013

# Added Value Services for EV charging management

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**tecnalia**  Inspiring Business

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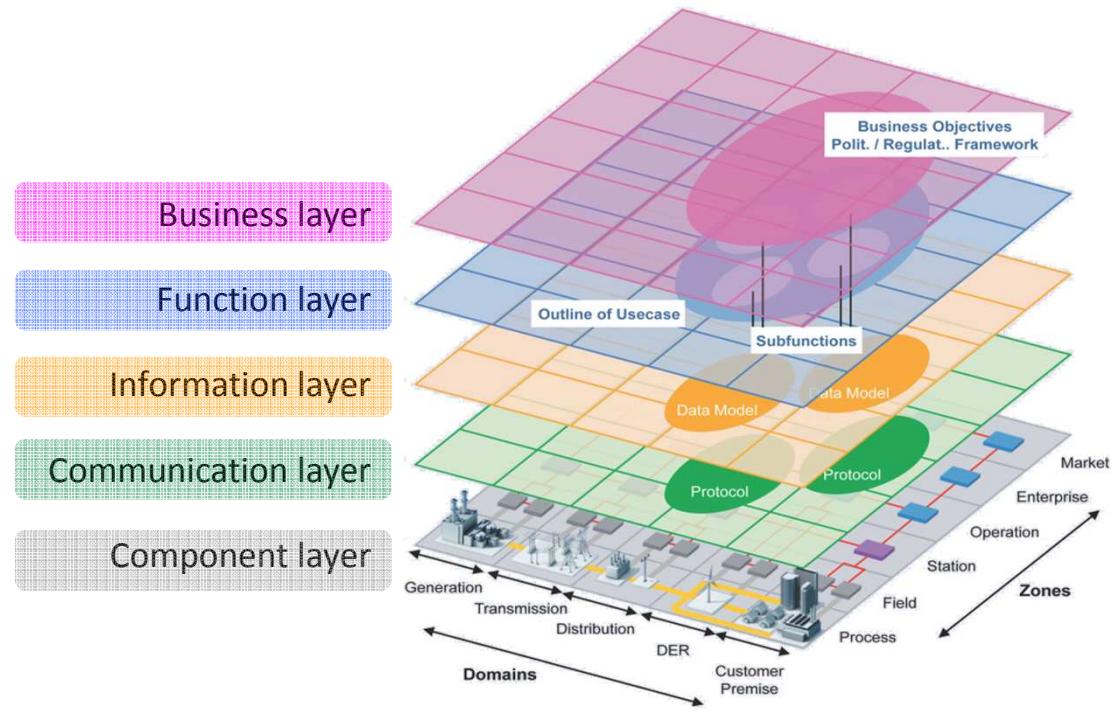
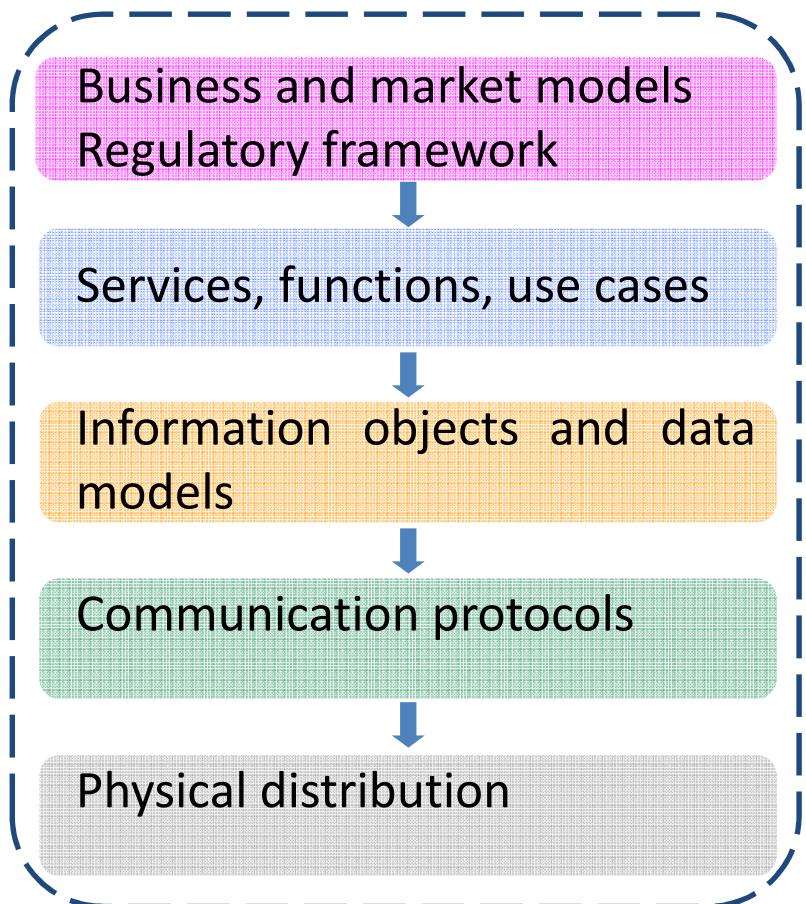
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Layers of SGAM framework  
CENELEC – Reference Architecture for the Smart Grid

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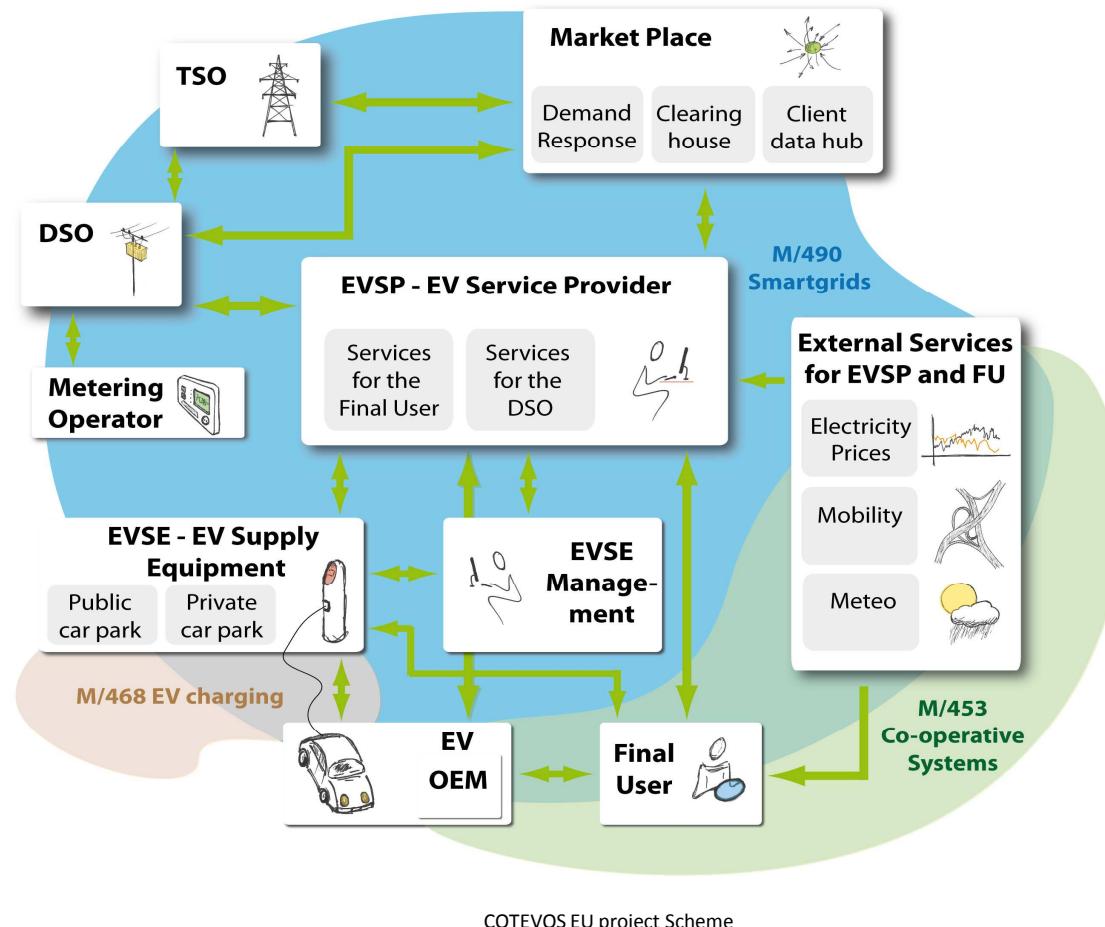
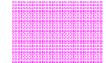


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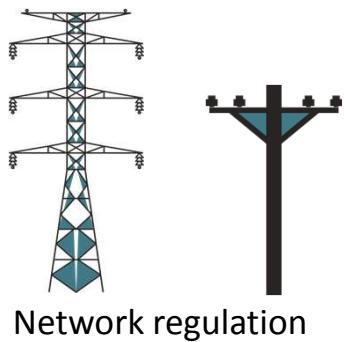
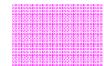


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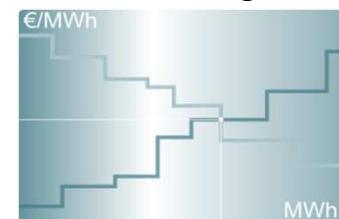


- Demand response (tariffs, d/i control...)
- Network operation procedures
- Low voltage code (infrastructure)
- Distribution activity economic compensation
- New actors definition

### Aggregator

- Wholesale electricity market
- Balancing markets
- Ancillary services markets
- Demand markets

### Market Design



- Support schemes, benefits for EV drivers
- Competence protection
- Administrative requirements, taxes

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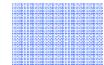
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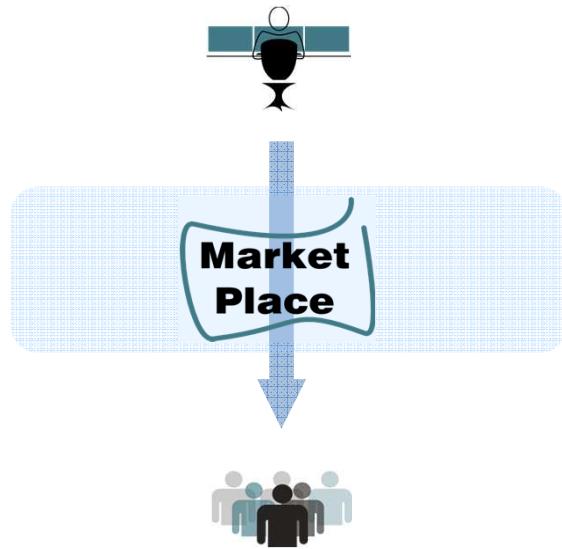
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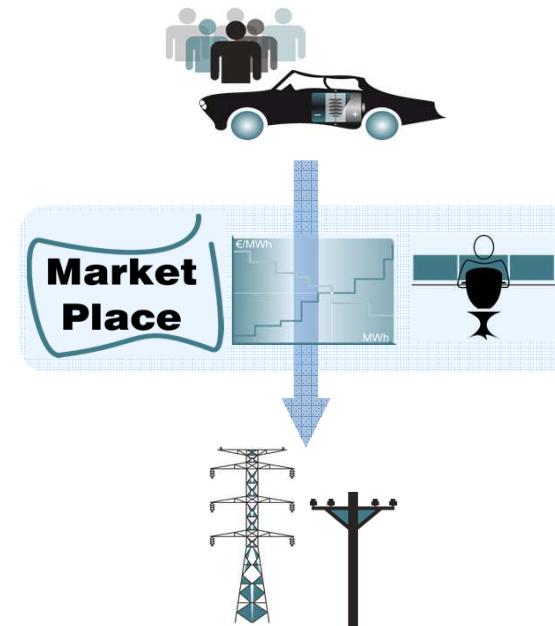
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### For EV users



### For the network



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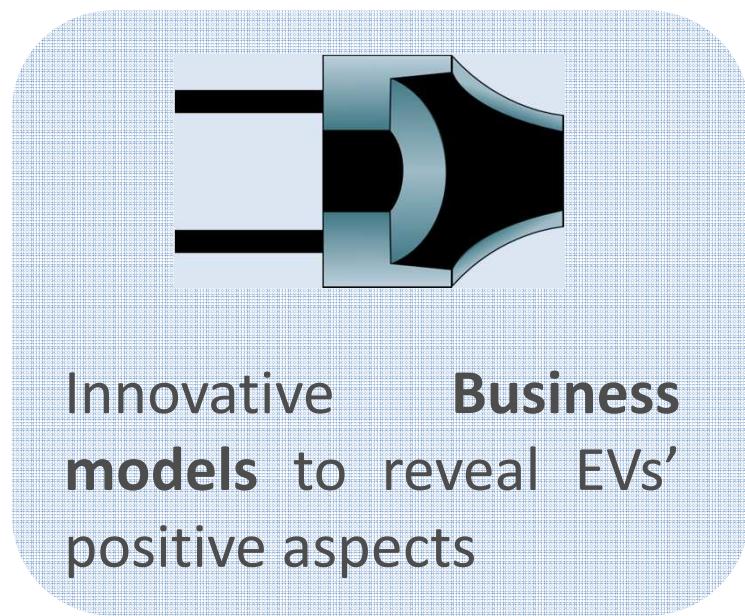


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Consumers' tendency to value losses higher than gains



Innovative **Business models** to reveal EVs' positive aspects



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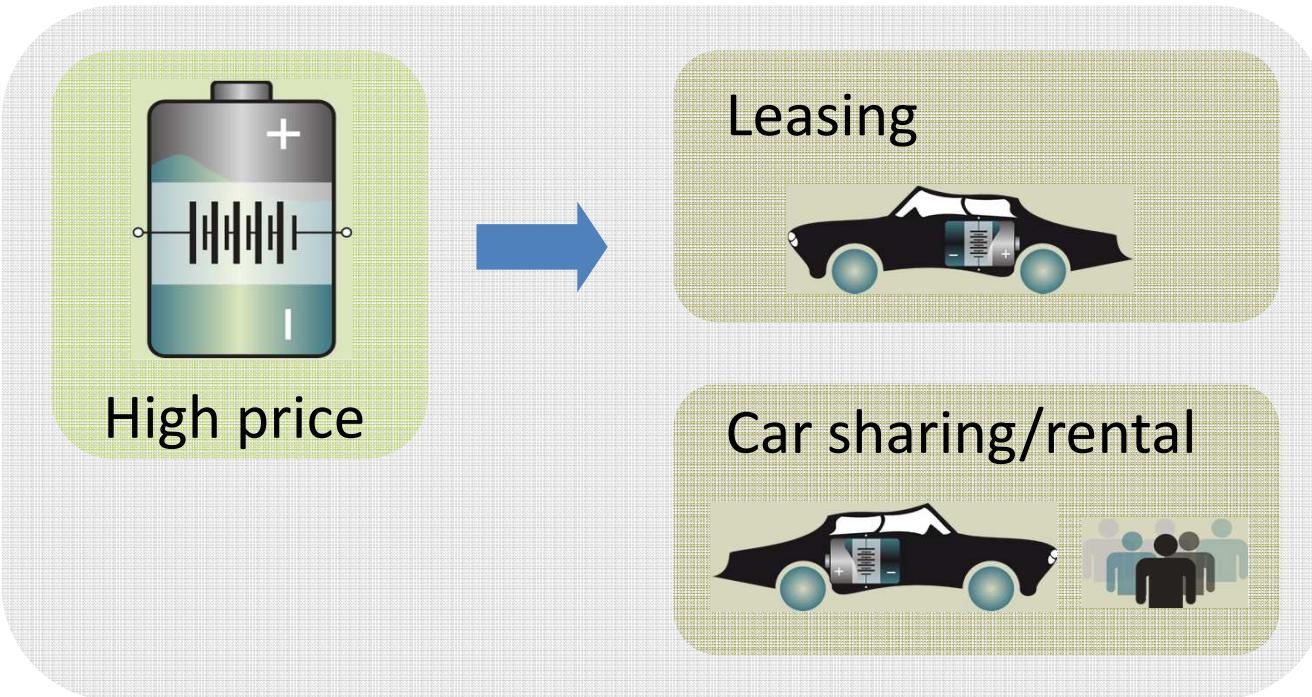


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Especially  
suitable services  
for EVs

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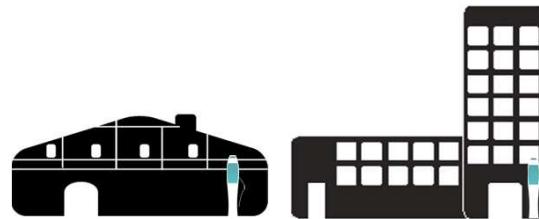
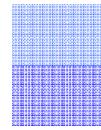


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Private

Semi-public

Public

Cost



Competition



Smartness



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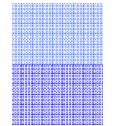
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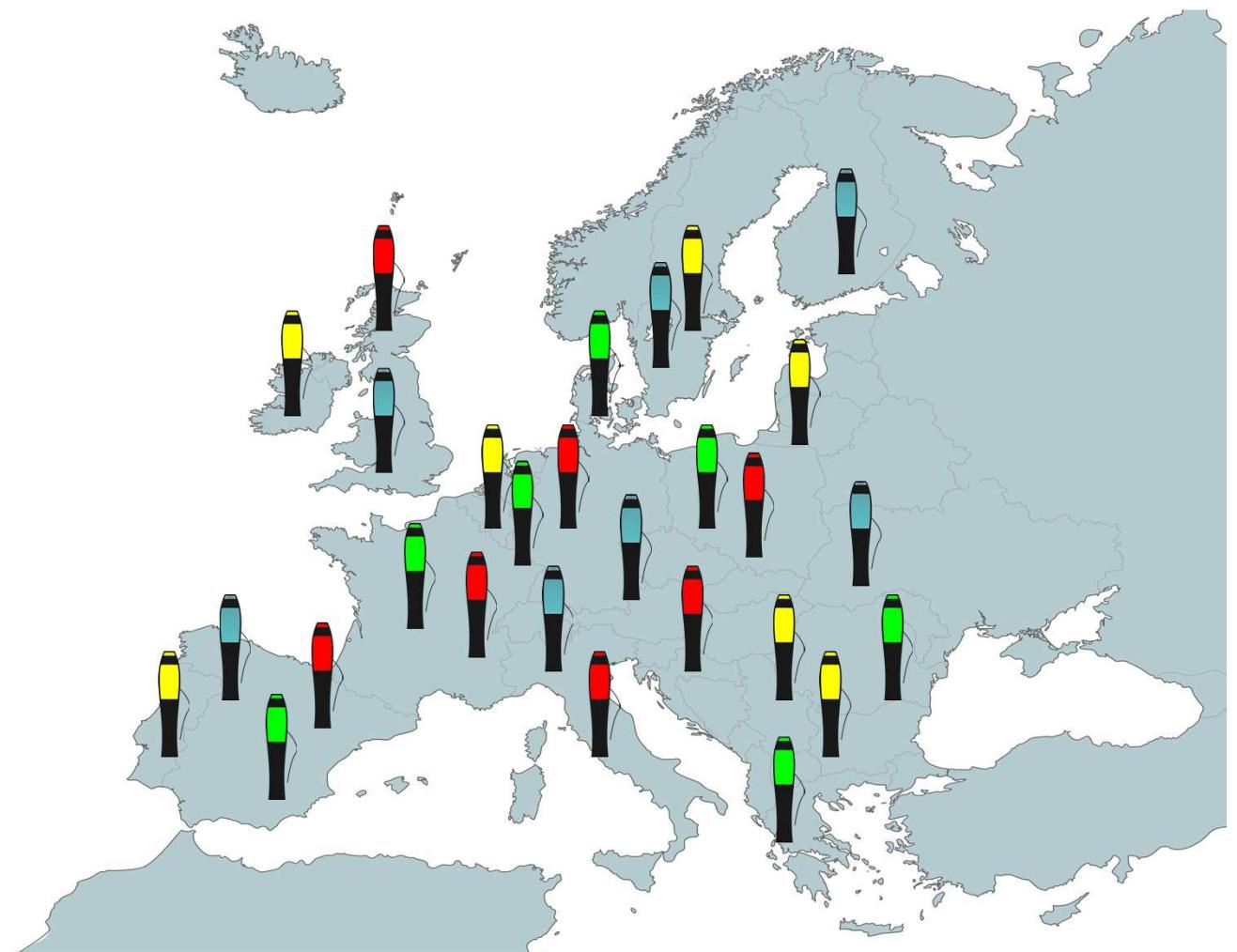
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Big companies able to cover wide areas

Standard solutions adopted by markets



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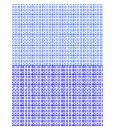


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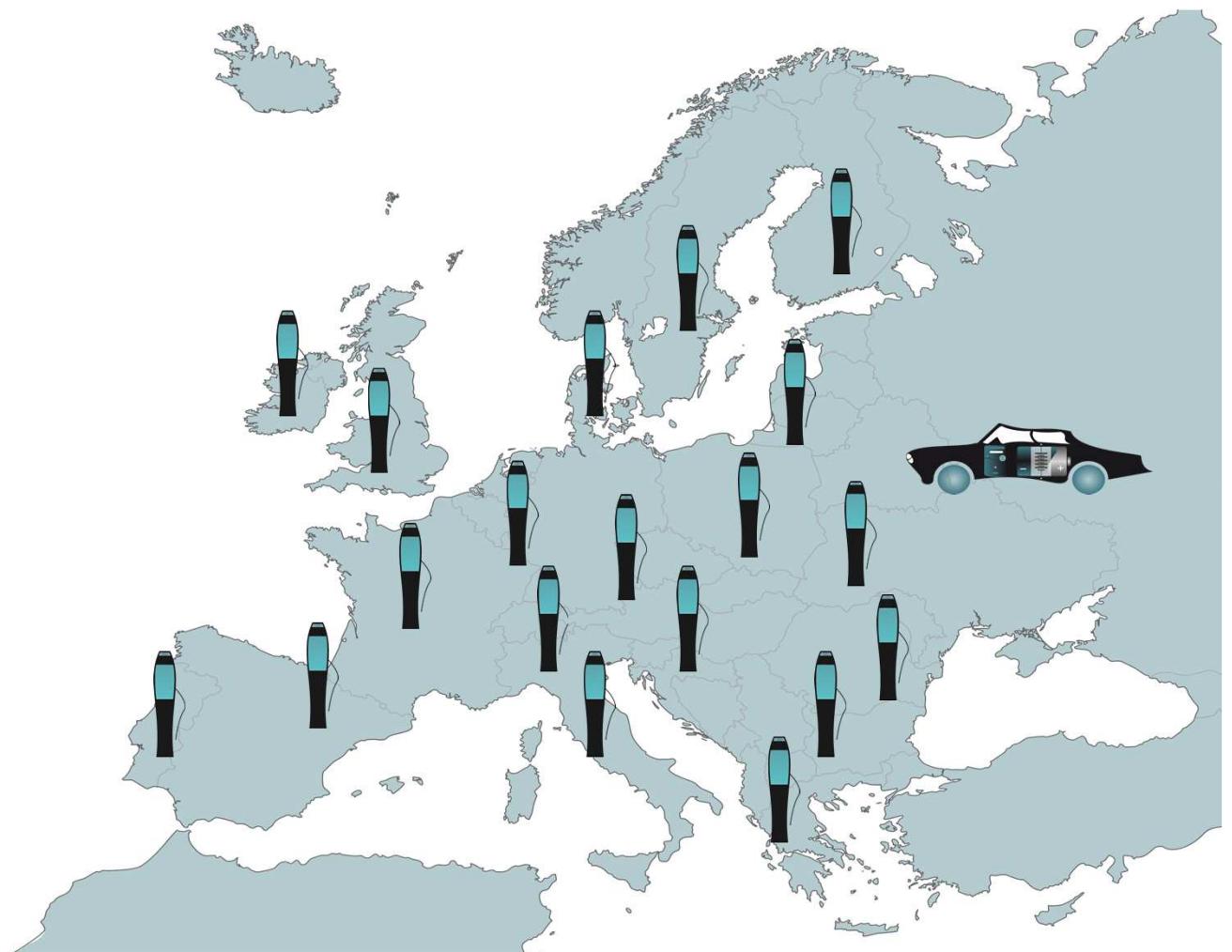
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Interoperability of services providing:

- Transparent and efficient services
- Comfort in long trips
- Expected overall lower costs



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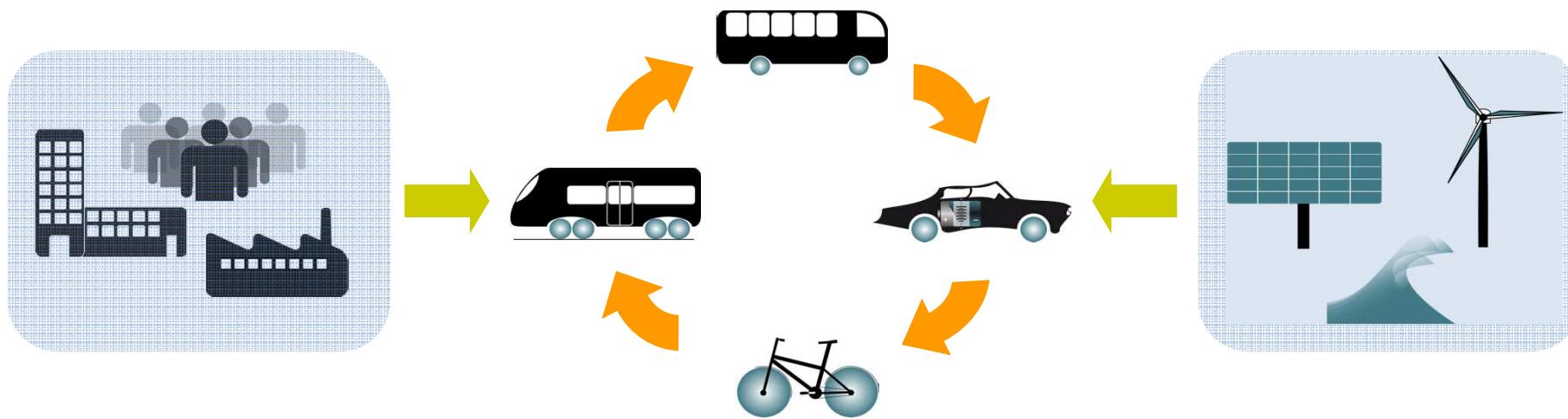


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EV as part of a global sustainable approach

Solutions offering new mobility concepts

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Billing and sustainability report access  
EV interior preconditioning, SOC monitoring  
Charging station location and reservation

EV specific

Vehicle diagnostics  
Real time traffic information, meteo  
Emergency assistance

Navigation & Tele.

Vehicle locator  
Vehicle access (smart phone as a key)

Access & Security

Car sharing vehicle location and reservation  
Multimodal transport information

Mobility

News  
Social networking  
Internet purchases

Entertainment

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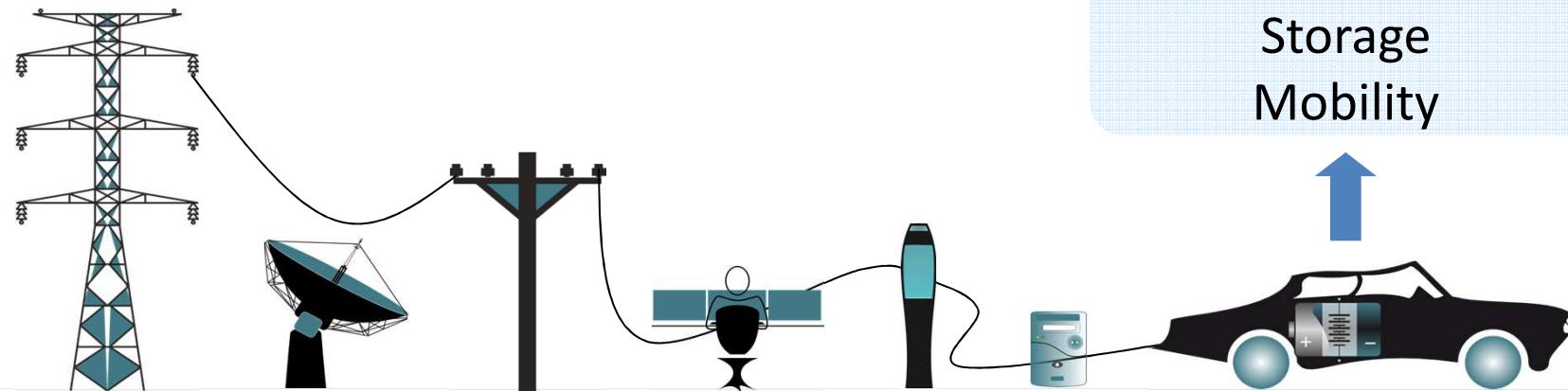
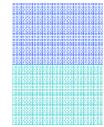
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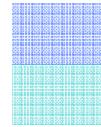


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### Wholesale market

V2G and aggregation necessary  
 Energy sale  
 Storage to compensate generation forecast

### Ancillary Services

Primary and Secondary regulation  
 Deviation management  
 V2G: Q power, voltage control, ride through capability

### Demand Response

Tariff strategies: ToU, CPP, RTP  
 Indirect & direct control: Negotiated Charging schedule  
 Demand markets

### Power Quality

Phase balancing  
 V2G: harmonic, flicker and voltage dip compensation  
 UPS, V2H

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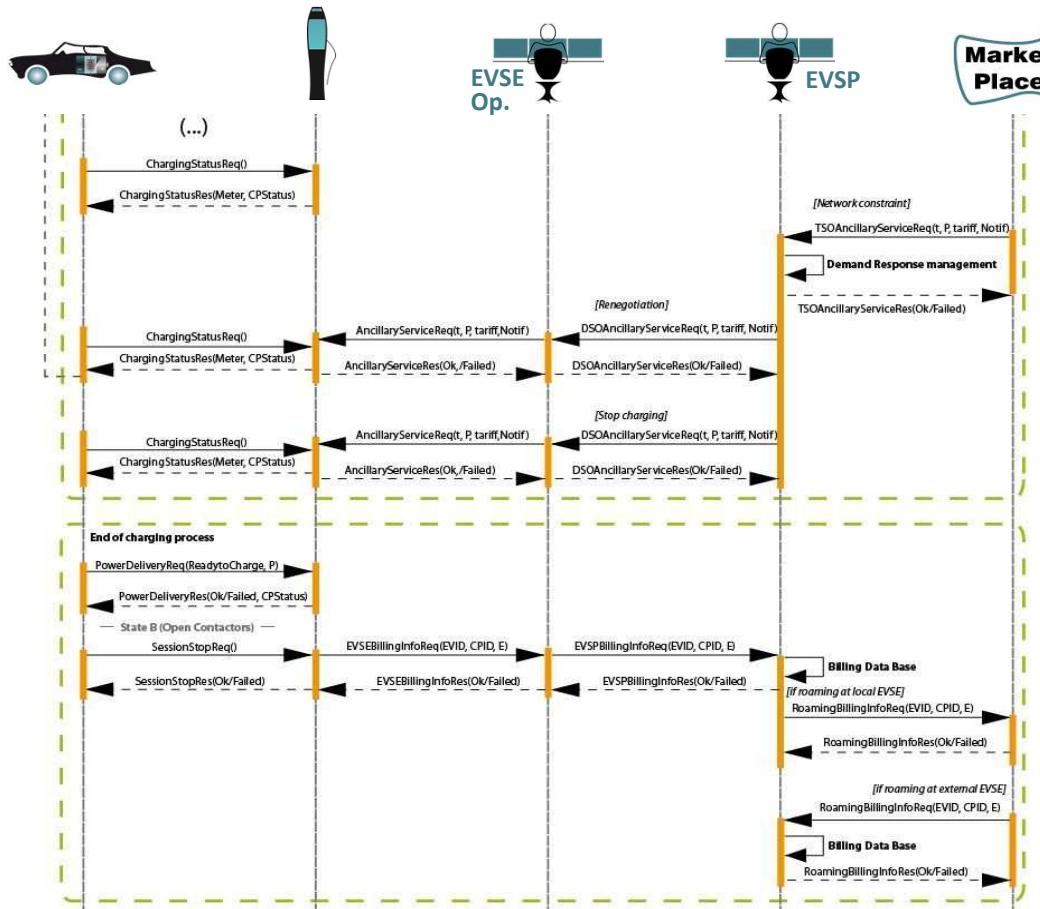
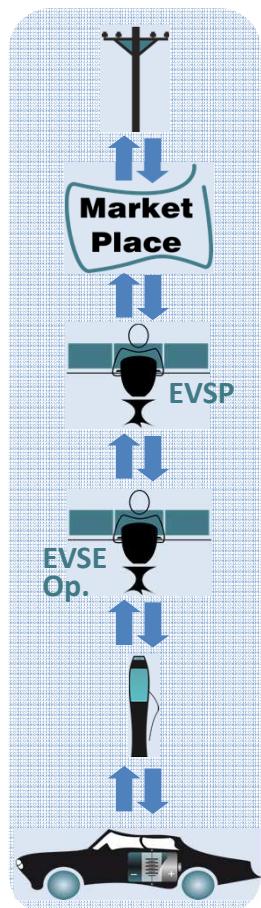
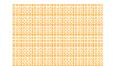


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Recommendations  
for services  
implementation

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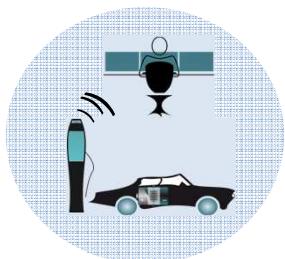
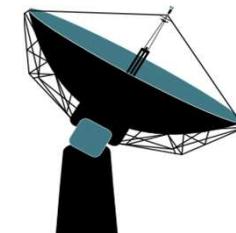
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EV related communication standards: IEC 61851-1, ISO/IEC 15118, OCPP, proprietary... EMI<sup>3</sup>



Interoperability with smart grids could provide synergies and reduce implementation costs

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## EU Projects - Tecnalia



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



[www.plangridev.eu](http://www.plangridev.eu)  
Network planning



[www.cotevos.eu](http://www.cotevos.eu)  
Interoperability assessment

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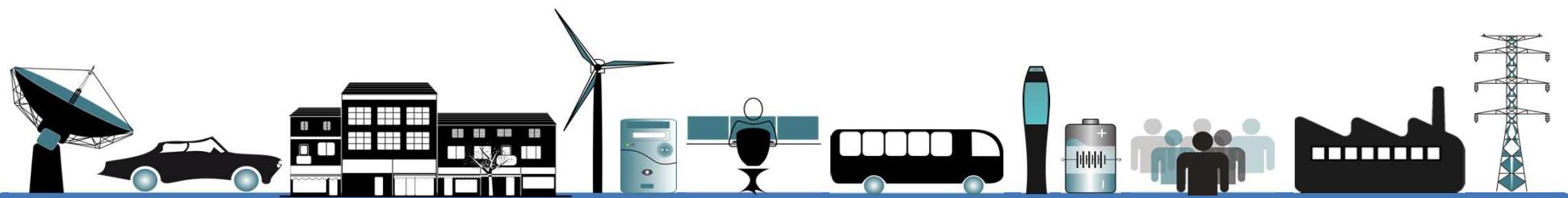


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References in the paper “Added Value Services for EV charging and management”

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