

Strategies for the transition to electric mobility

Gilles BERNARD

ERDF

gilles-id.bernard@erdfdistribution.fr

- ✓ EV major advantage is in day to day use : High Tank to Wheel energy efficiency, low local environmental impact .
- ✓ It has to be maximised for a positive global benefit through an intensive use and a long lifespan of each EV.
 - ☞ **This calls for high mileage users or shared usage.**
- ✓ charging process must be controlled according to instantaneous parameters:
 - electricity production mix, for low dependence on fossil fuel and low CO2 emission,
 - cost of electricity, and
 - network constraints for best economy.
 - ☞ **This calls for "smart charging" as a general organisation for EV supply.**

Smart charging in order to benefit from:

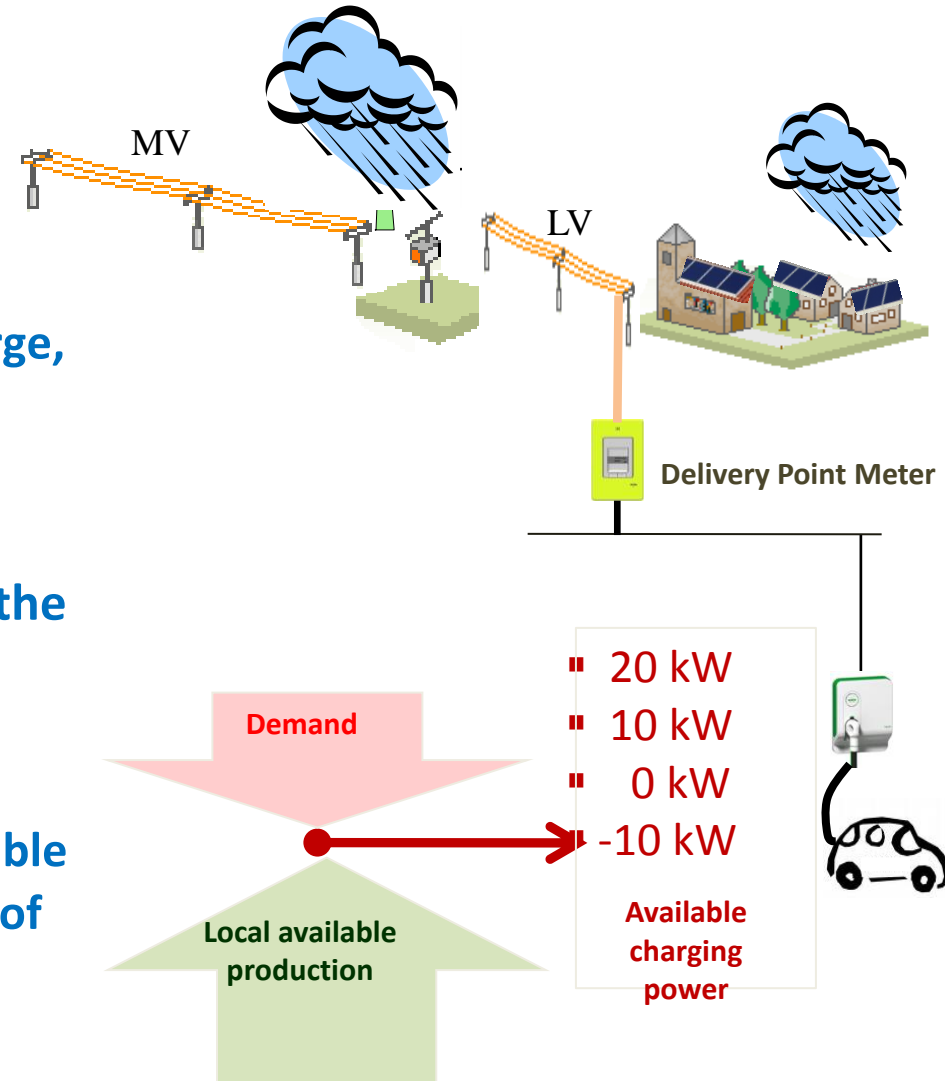
- ✓ Availability of local renewable production,
- ✓ Lower electricity price,
- ✓ Lower network costs.

Electrical Vehicles offer possibilities to :

- monitor time of recharge
- monitor instantaneous power of recharge, up or down
- potentially reinject energy into the network.

The meter operator transmits signals to the charging operator in order to reflect :

- Electricity tariff of the supplier
- Use of system tariff of the DSO
- Availability of power from local renewable
- Constraints in relation with congestion of DSO's grid.



Substituting Electrical Vehicles to fuel vehicles is a cultural break !



Too short autonomy !
Where is the station ?
It's too long to refill !
It's complicated !
It's costly !



From historical cars pattern
To new mobility with EV,
resolving drawbacks

Three gearing ways to succeed :

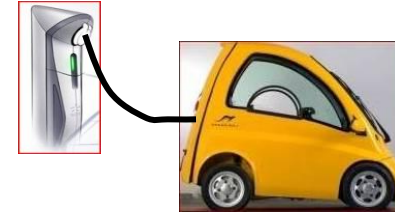
- ✓ Create services around mobility and electricity charging to free the user,
- ✓ Coordinate service providers initiatives and solutions to improve overall mobility and create global efficiency,
- ✓ Promote and explain solutions widely.



Reach good records on:

- ✓ economics,
- ✓ environmental impact,
- ✓ needs satisfaction.

Relativize autonomy hurdle considering actual needs



☹️ Short autonomy of EV (~150 km)

☹️ Long time to refill (~8h)

But :

😊 ~90% of daily travels are under 40 km.

😊 A private EV is stopped more than 90% of its life

- Charging spots mainly on parking places at night.
- low speed charging is generally sufficient.
- If plugged every night, recharging duration is generally less than 2h.

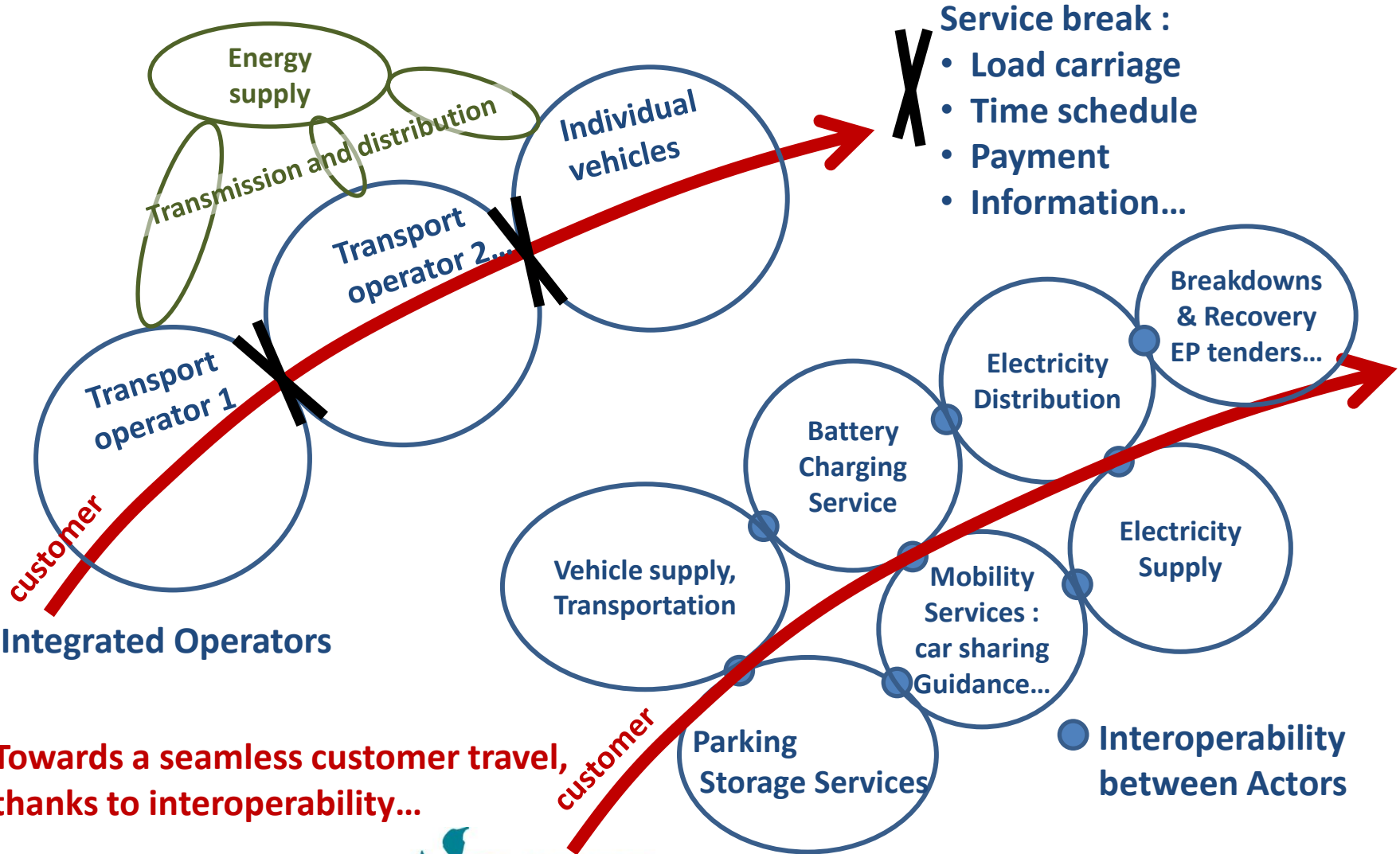
Therefore,

- 👉 Any time I stop a long time, I plug in when available.
- 👉 At least every night, in a controlled plug so as to avoid peak demand and benefit from low tariff of electricity.
- 👉 Specific solutions for intensive or long range travelers



I don't need gas stations anymore, It's at home !

Multimodality : changes in service business model, from integrated to interoperable services.



Towards a seamless customer travel, thanks to interoperability...

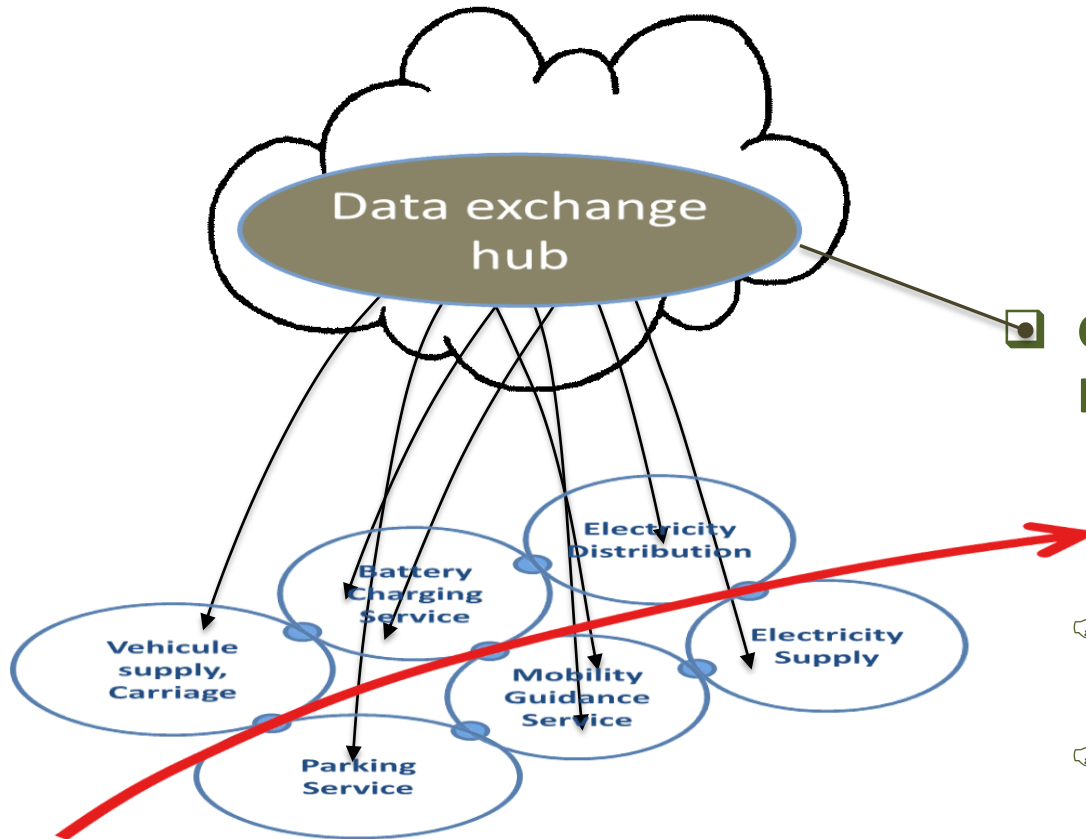
Means to change service business model

☐ Communicating Systems

=> Standardisation of

- Roles and use cases
- Human Machine Interfaces
- Data Models
- Telecommunication Protocols

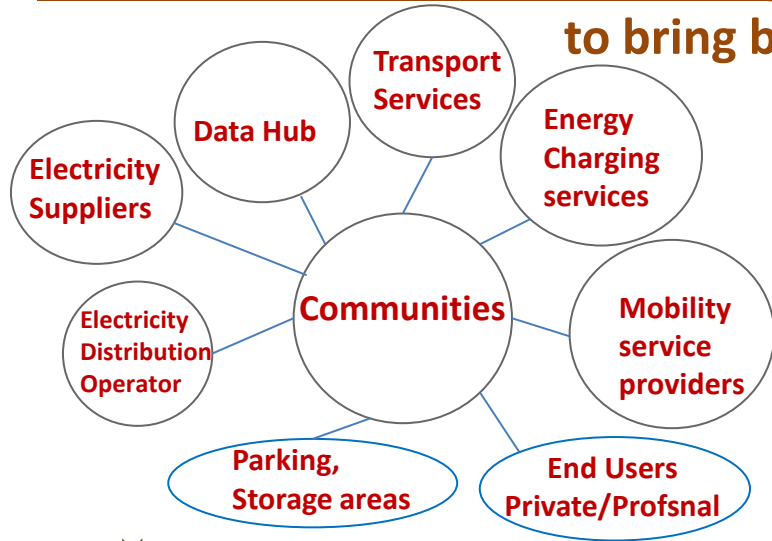
☐ Gireve initiative in FR,
Hubject in DE, E-Laad in NL...



- ☞ A powerful cooperation and coordination within Europe.
- ☞ A political implication of Communities

More general approach on service organisation: a cluster work leaded by Communities,

to bring best value for investments, and value to end users.



↳ Political design to cover transportation needs,
in accordance with economical and environmental targets

↳ Scenario for EV development and their supply mode

↳ Charging infrastructure plan with multimodality approach

↳ Communicating charging stations

↳ Smart charging deployment

↳ Organisation of interoperability between services