Strategies for the transition to electric mobility

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 ✓ 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

œ Short autonomy of EV (~150 km)
œ Long time to refill (~8h)

But:

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

Service break:
- Load carriage
- Time schedule
- Payment
- Information...

Integrated Operators

Transport operator 1

Transport operator 2...

Individual vehicles

Energy supply

Transmission and distribution

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

Customer

Integrated Operators

Vehicle supply, Transportation

Battery Charging Service

Mobility Services: car sharing Guidance...

Parking Storage Services

Interoperability between Actors

Electricity Distribution

Breakdowns & Recovery EP tenders...

Electricity Supply

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