



E-Mobility

Trends, Perspectives & Opportunities

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AGENDA

- **Electrical Vehicle : global trends outlook**
- **E-mobility context is moving, users expectations too... But there are still pain points !**
- **Smart Charging offers significant opportunities to build comprehensive value proposition...**



Electrical Vehicle global trends outlook

CONTEXT : COUNTRY & POLITICAL LEADERSHIP

2025



2030



TB
D



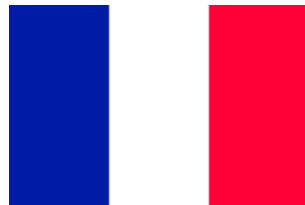
2030



TB
D



2040



2040



Countries that will ban internal combustion engines

CONTEXT : OEM MASSIVE INVESTMENT IN EV TECHNOLOGIES

Sept -2017 VW announces \$84 billion investment in electric cars and batteries



Sept -2017 Renault-Nissan-Mitsubishi to invest £8.9bn in electric cars

Oct-2016 Daimler Announces \$11 Billion Investment For Electric Vehicles



DAIMLER

CONTEXT : LI-ION BATTERY PRICE

TREND

Average battery pack price

\$ per kWh

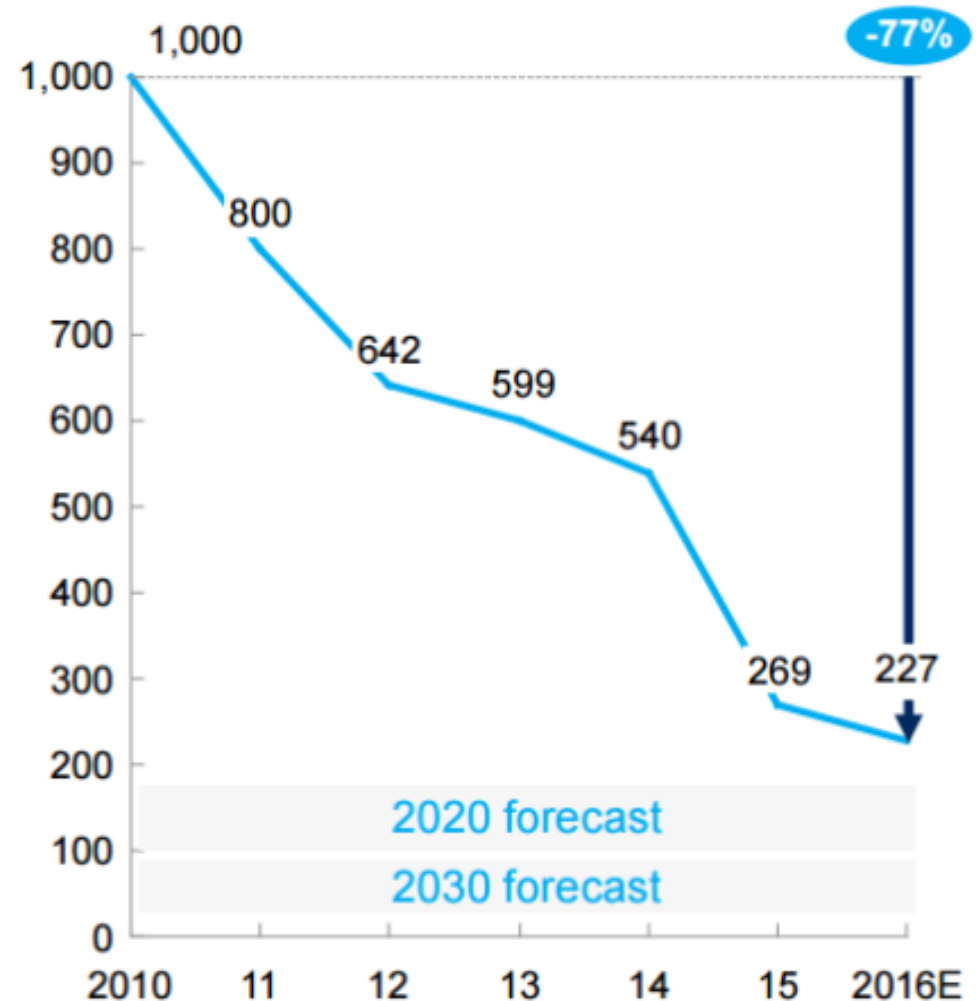
For 15 000 \$

- 2012 Pack 24 kWh

150 km 

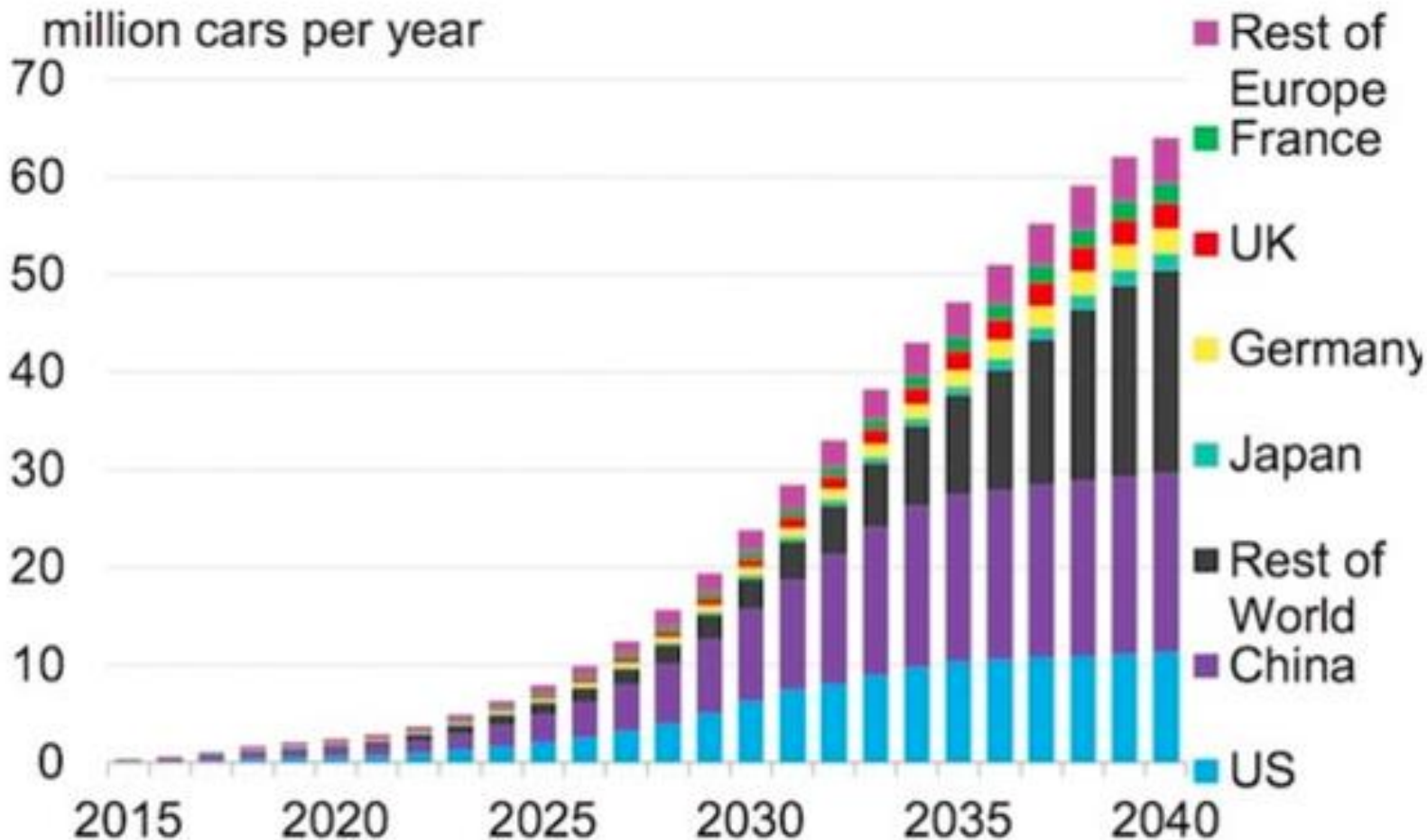
- 2020 Pack 100 kWh

600 km 



Source : Tesla

CONTEXT : THIS LEADS TO A BOOMING MARKET FORECAST



— A new forecast for electric cars shows explosive growth in new sales, particularly in China. Bloomberg NEF

CONTEXT : DON'T MISS THE ECOSYSTEM...



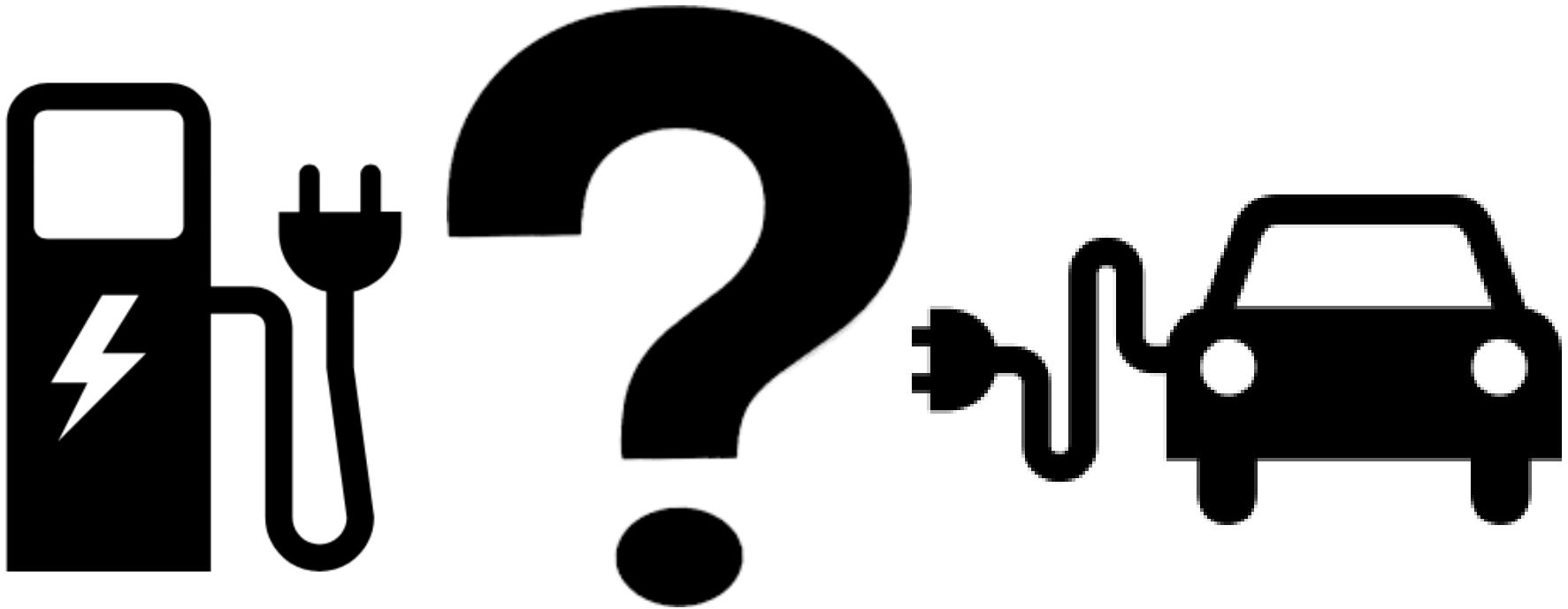
Zero Emission Solutions and Technologies



**E-mobility context is moving,
users expectations too...**

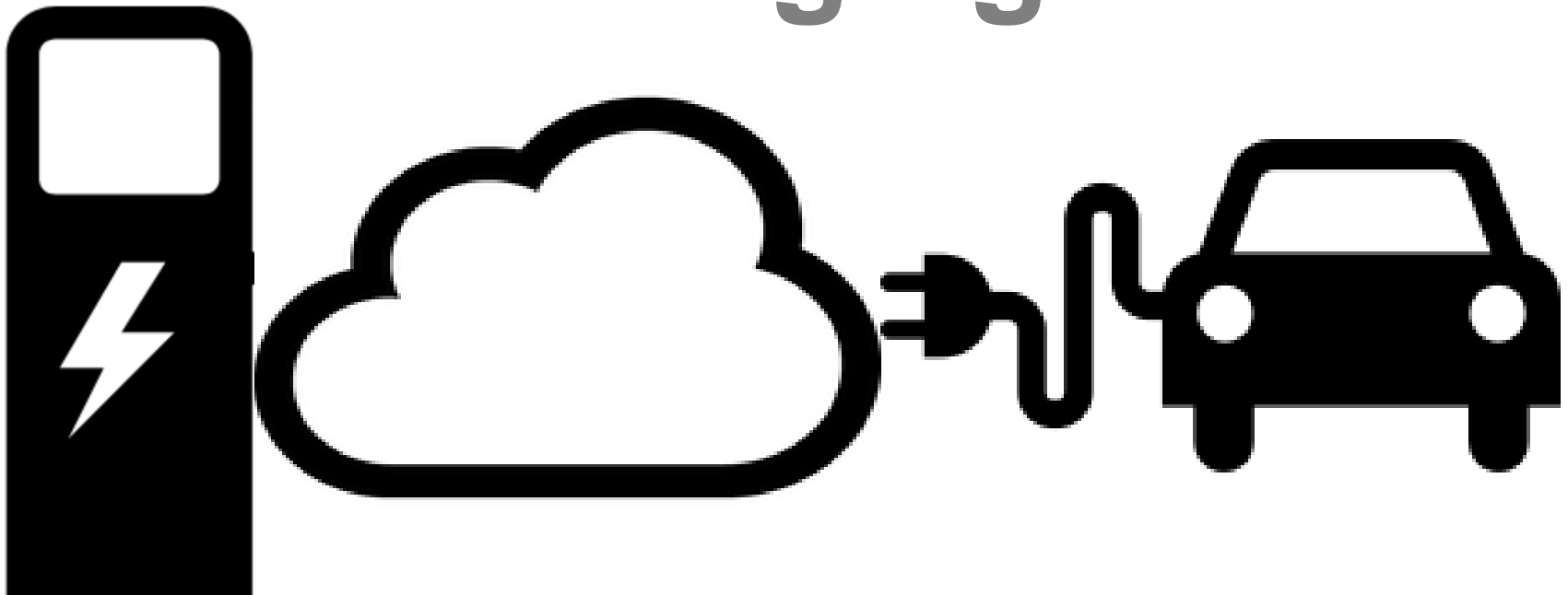
USER'S PARADIGM IS SHIFTING

I need to plug in...

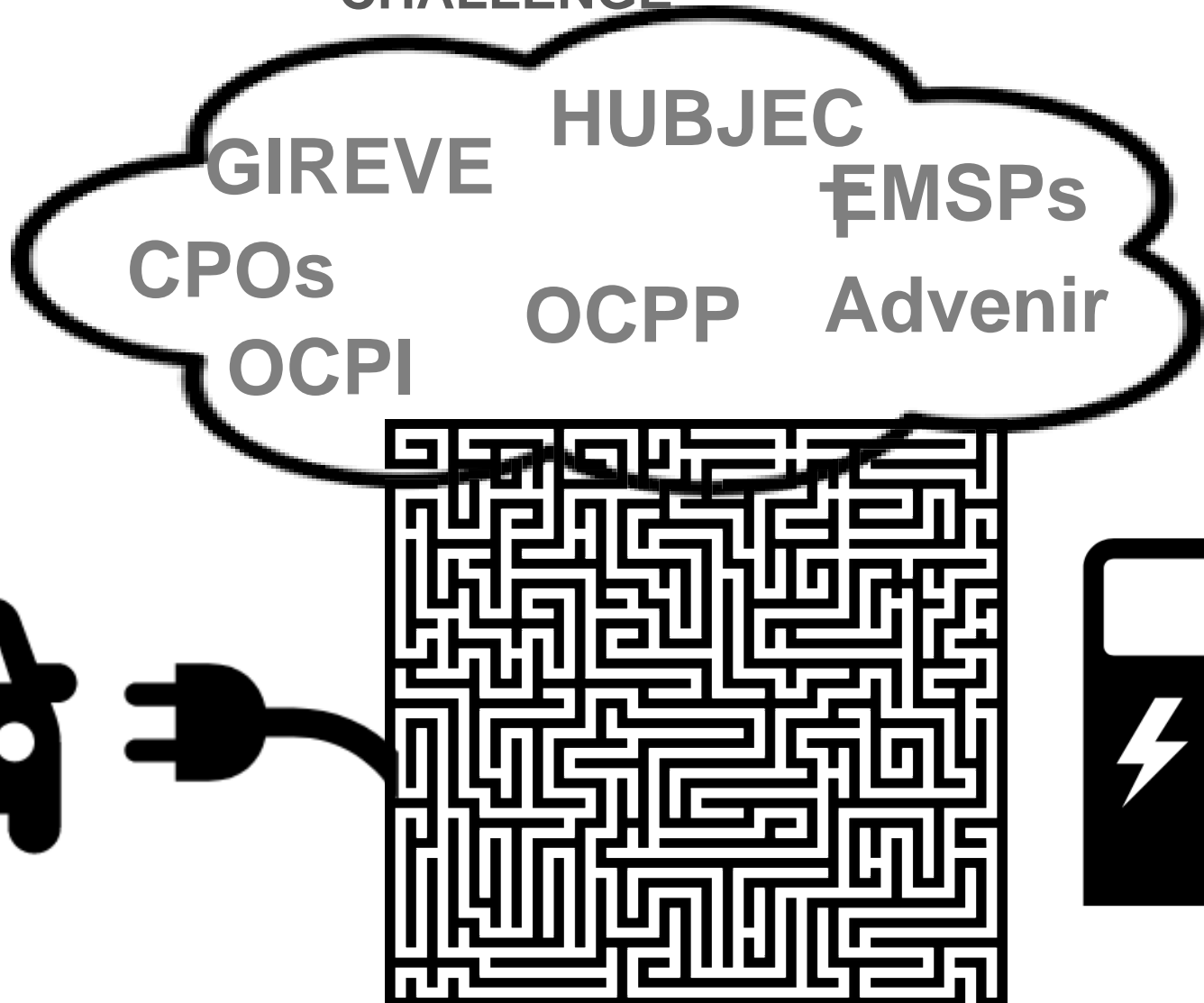


USER'S PARADYGM IS SHIFTING

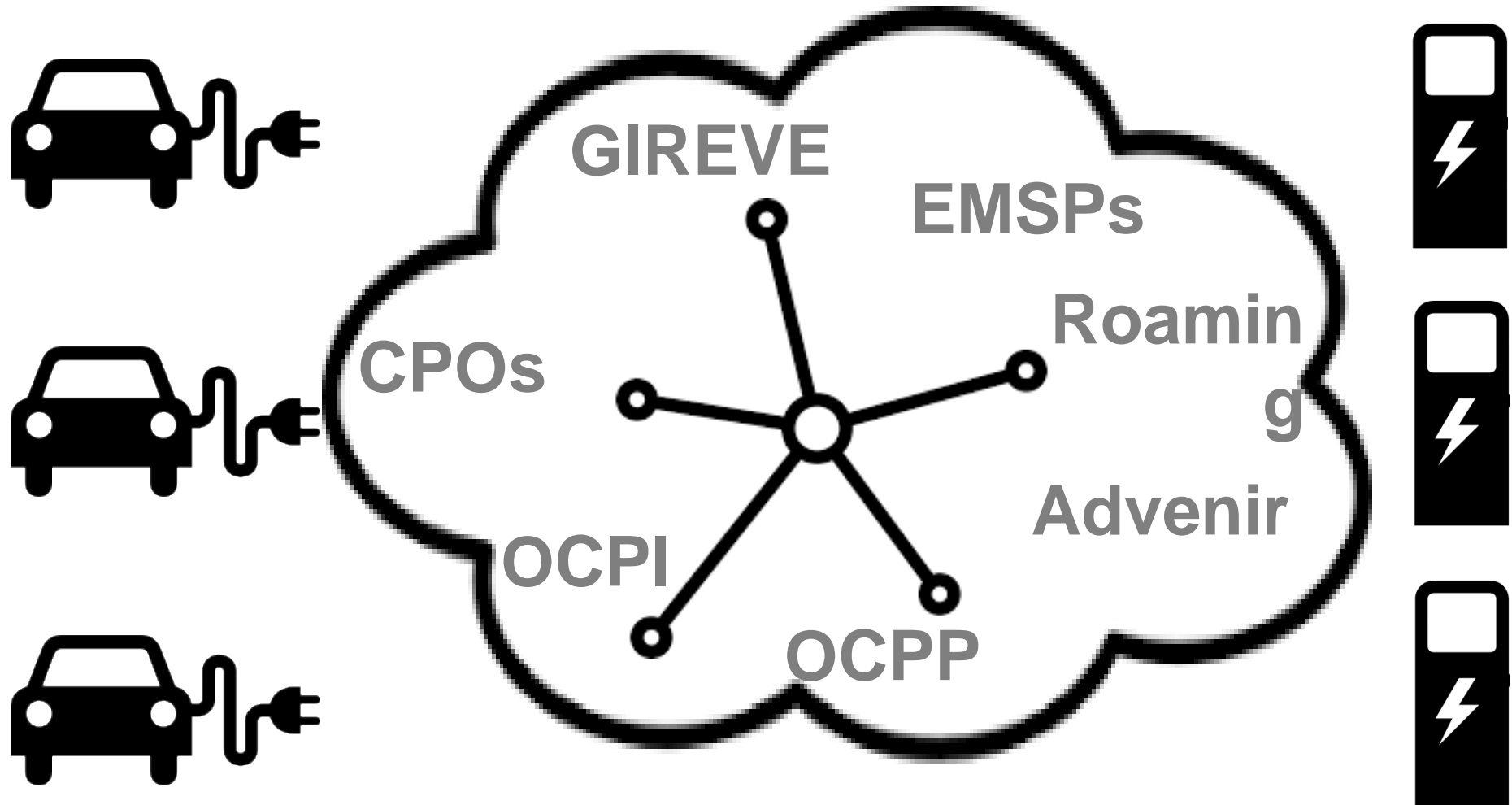
I need a seamless charging service



BUT... BRIDGING THE GAP IS A CHALLENGE



USERS NEED SOLUTIONS WE HAVE TO CONNECT THE DOTS...



Pricing Model & Business Model

Use Case:



Fleet



Company car



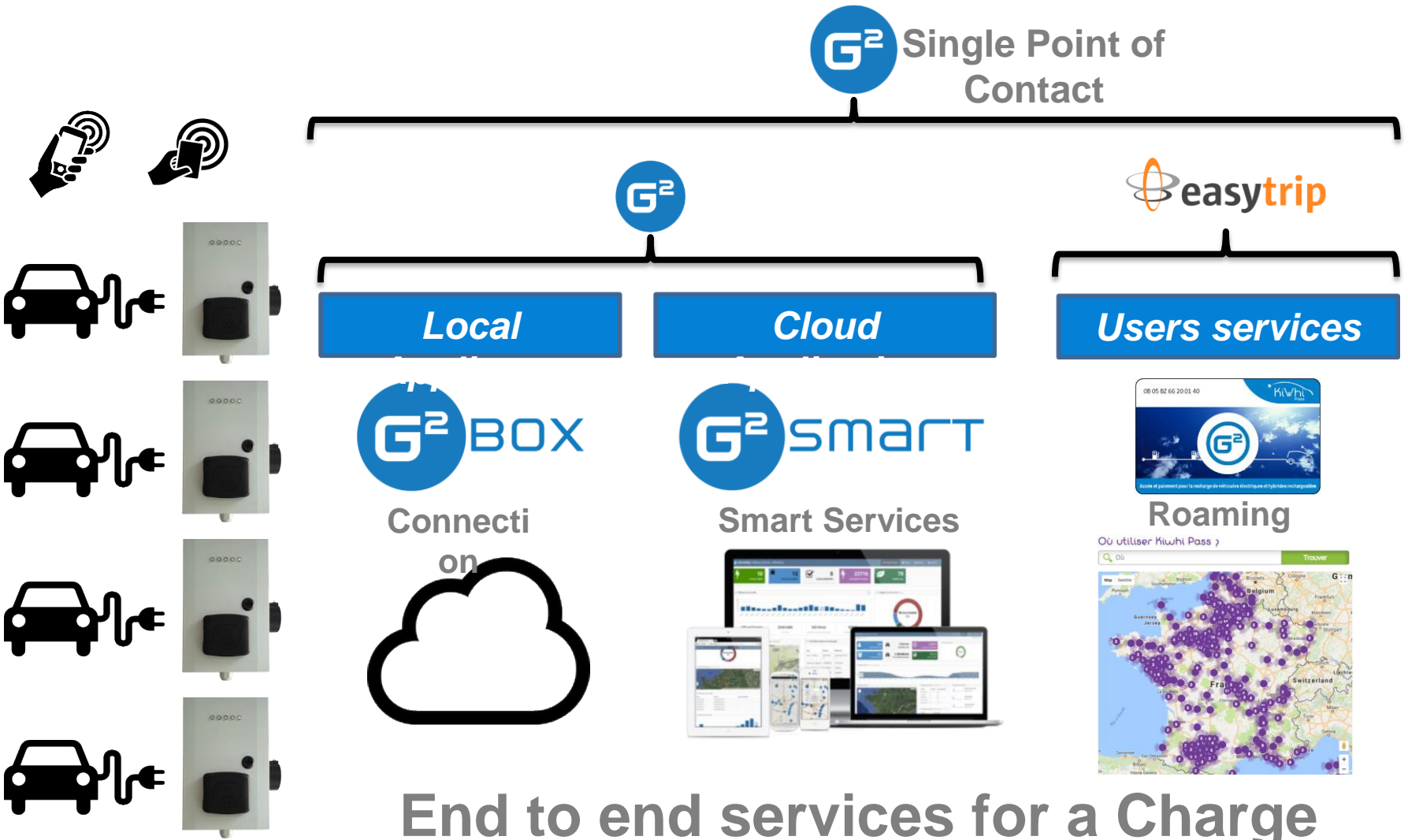
Employee

One stop shopping

Complete CPO Tool kit

1. EVSE management & operation
2. Users service management
3. Commercial & administrative support



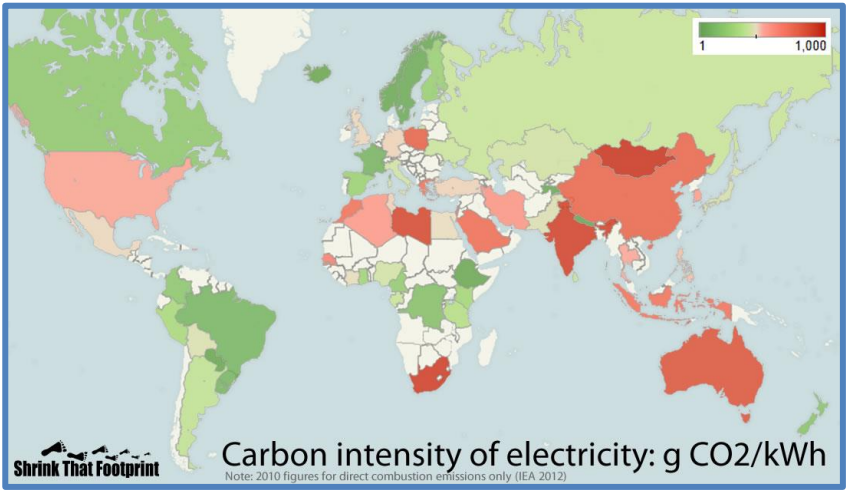
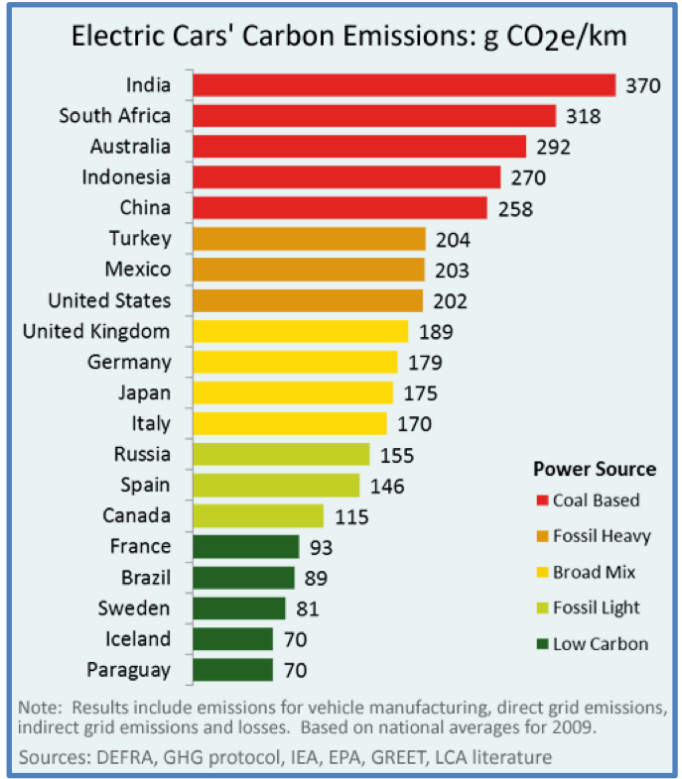
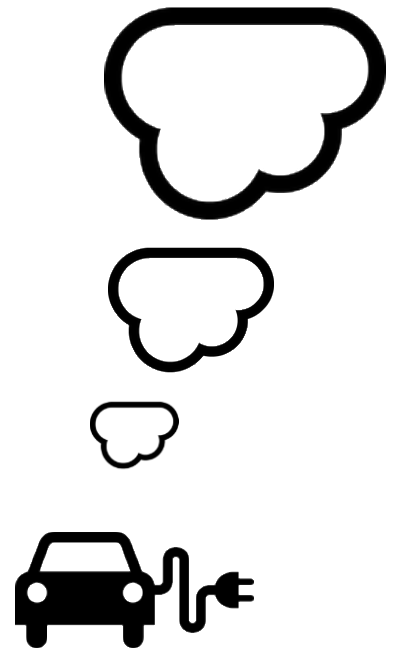


A photograph of an electric vehicle charging station in a garage. Several white cars are parked in a row, each with a charging cable plugged into its charging port. The charging stations are white and mounted on the wall. The scene is dimly lit, with overhead lights providing illumination.

Smart Charging... Not an option

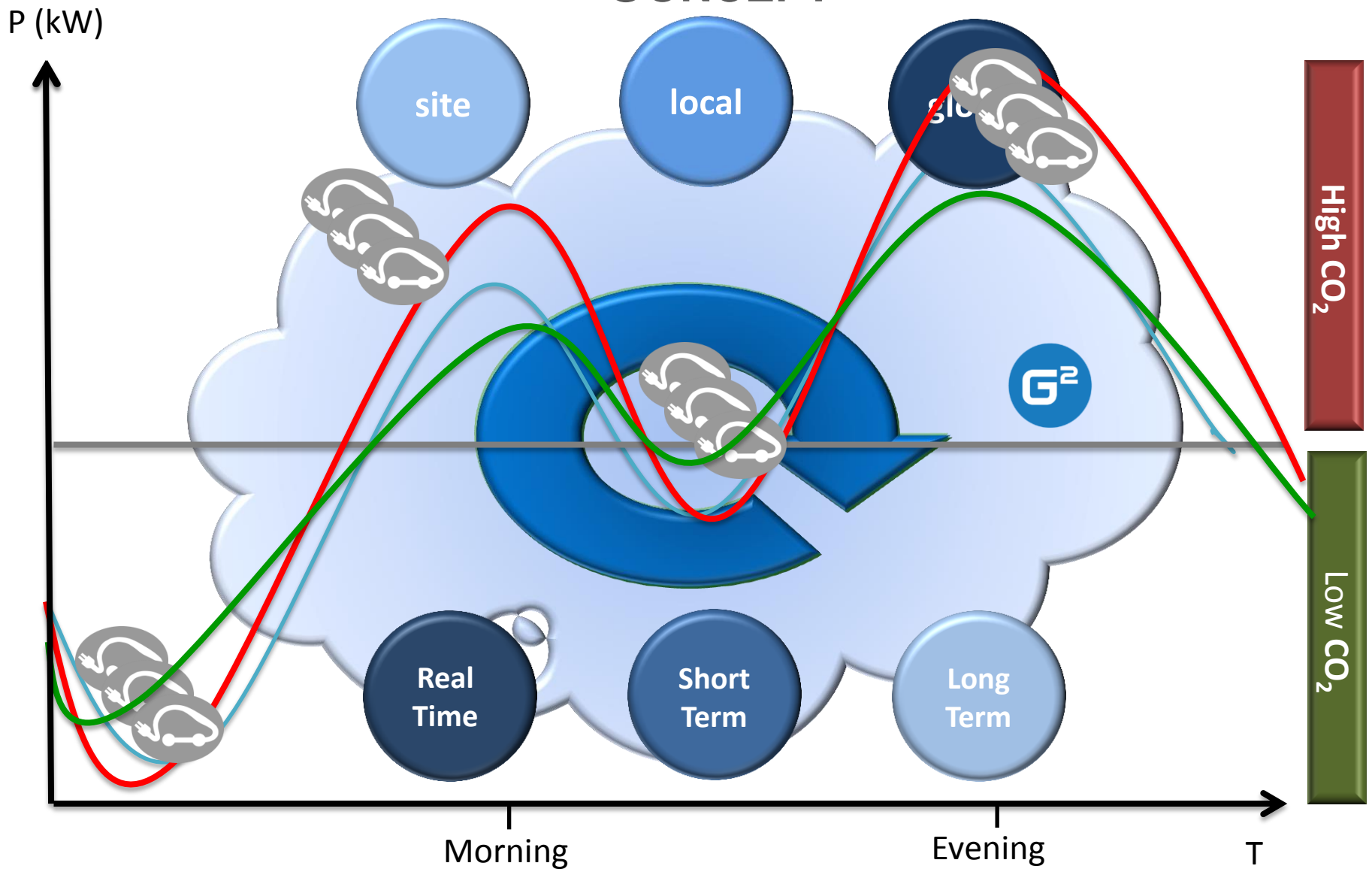
Unit: TWh 2016 Highest ▾

China	5,219
United States	3,867
India	1,065
Japan	927
Russia	887
Germany	533
South Korea	512
Brazil	509
Canada	498
France	448
United Kingdom	307
Saudi Arabia	296



This broader issue impacts EV relevance and requires Smart Charging to take it into account

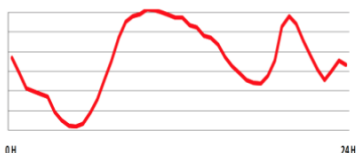
POWER & SMART CHARGING CONCEPT



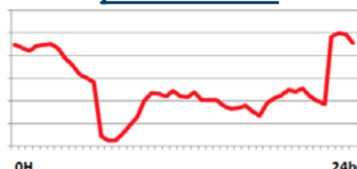
SMART CHARGING ..DRILLING DOWN DSO VIEW

→ La recharge des VE affecte différemment les étages du système électrique

Courbe de charge journalière nationale



Courbe de charge journalière ex. un poste source



Courbe de charge journalière ex. un poste MT/BT



**Marché
Fourniture
Capacité**

**Réseaux et
Système
de transport**

Réseau moyenne tension

Distribution intérieure

Réseau basse tension

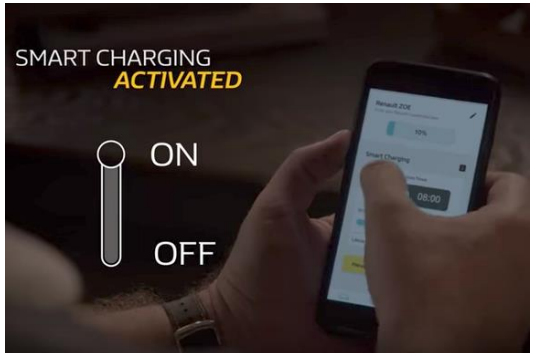
Hypothèse : 1 million de véhicules électriques se rechargent simultanément (enjeu 5 % de la Pmax)

300 à 3000 VE simultanément (enjeu 3 à 25% de la Pmax)

0 à 100 VE simultanément (enjeu 0 à 100% de la Pmax)

SMART CHARGING USE CASE... IN ACTION

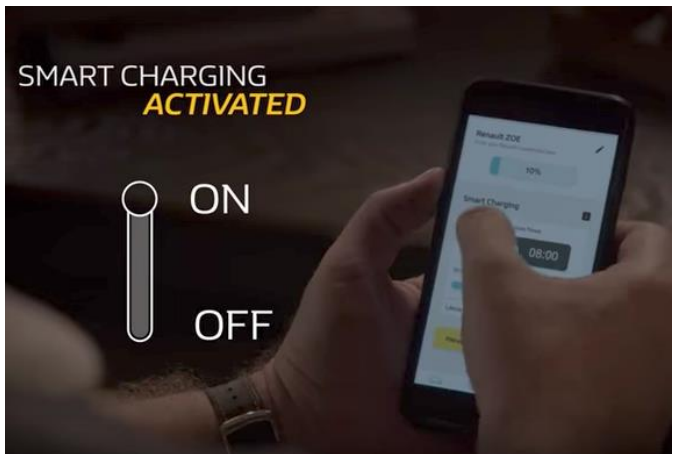
Today



Credit : The app ZE Smart Charge | Renault & Alto Charge Point | G2mobility

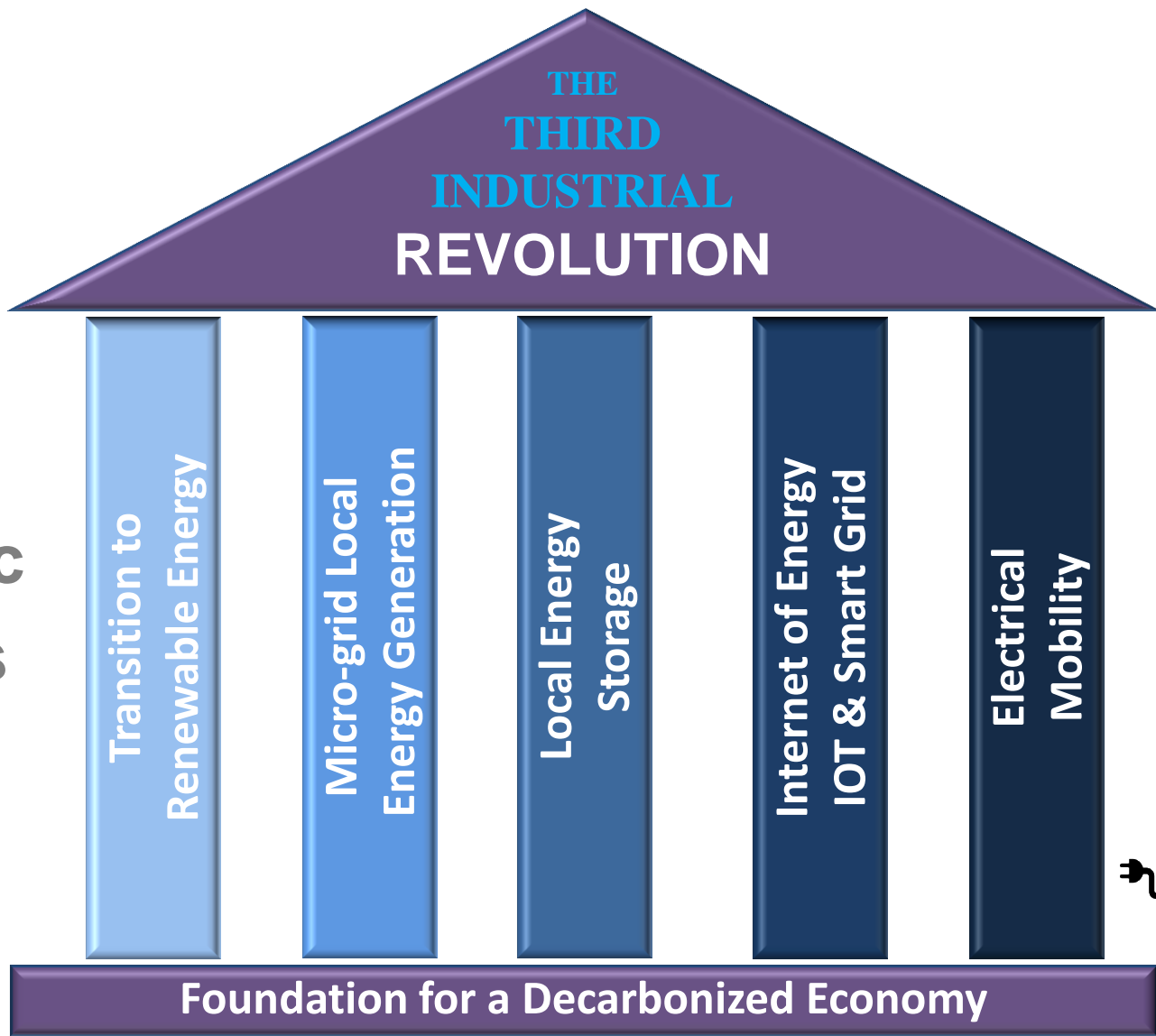
SMART CHARGING USE CASE... IN ACTION

Tomorrow



Credit : The app ZE Smart Charge | Renault & Alto Charge Point | G2mobility

ELECTRICAL VEHICLE & SMART CHARGING BROADER VIEW & PERSPECTIVE



Key Points
Users centric
Ecosystems
Business
Model



LET'S BUILD E-MOBILITY FUTURE TOGETHER !

