



ELECTRIC VEHICLE

RENAULT, DRIVING THE ELECTRIC REVOLUTION

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ENVIRONMENTAL STAKES



Health
“Airpocalypse”



Climat
Limiting warming $< 2^{\circ} \text{C}$



RENAULT: FROM PIONEERING TO 2ND GENERATION OF ELECTRIC VEHICLES

2009

2012

2016



IAA Frankfurt 2009
EV strategy reveal



Geneva 2012
ZOE Reveal



Paris 2012
Full EV Range



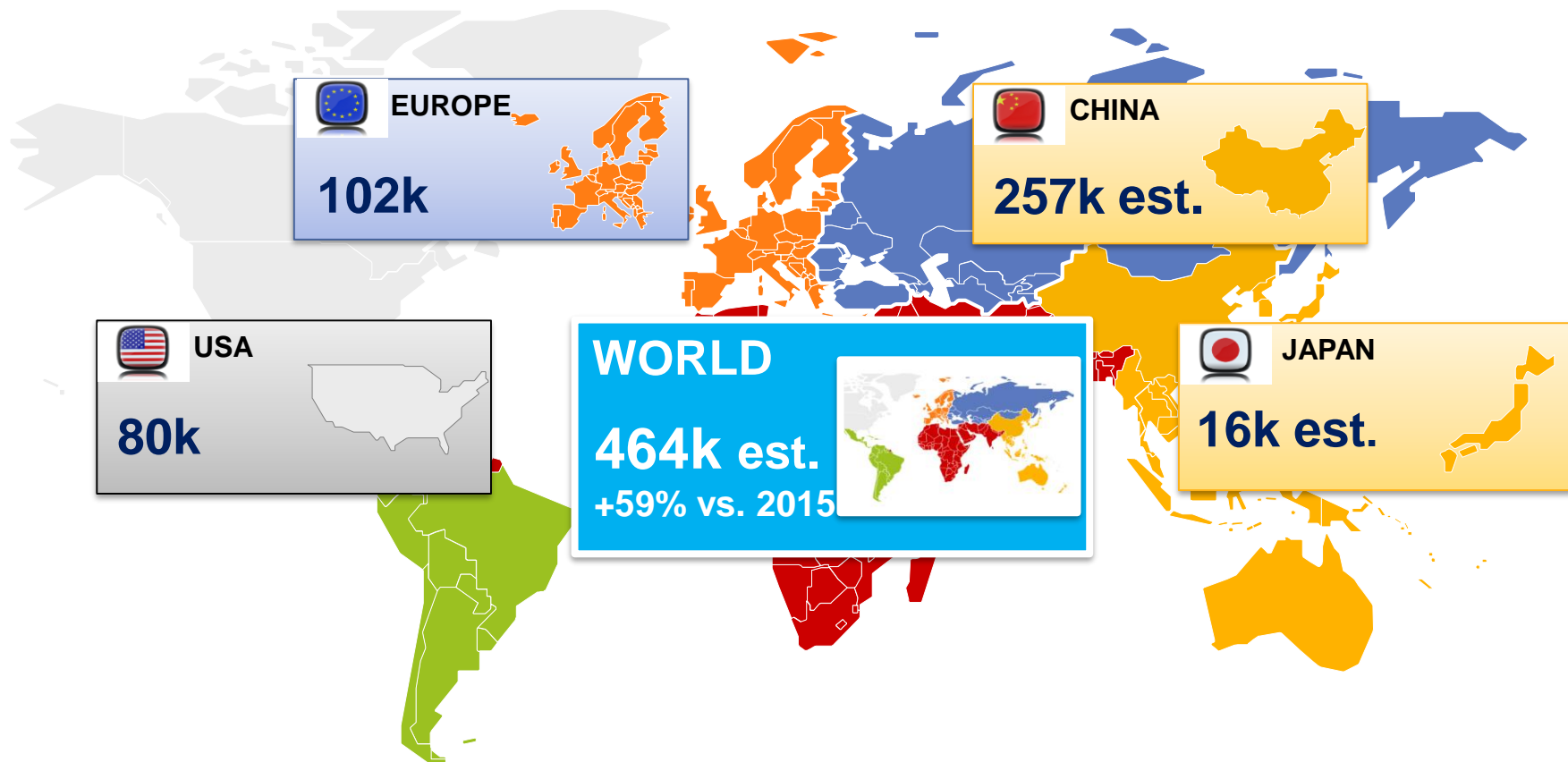
Paris 2016
New ZOE
(400 km NEDC)



Brussels 2017
New Kangoo Z.E.
(270 km NEDC)
& Master Z.E.
(200 km NEDC)



WORLD EV MARKET IN 2016: +60% VS. 2015 – EUROPE 2ND BEHIND CHINA



8 YEARS OF EXPERIENCE TO BUILD A COMPETITIVE ADVANTAGE

FIRST MOVER WITH 4 MODELS



TECHNICAL EXCELLENCE

- 3 Formula-E championships
- 2014 - 2015
2015 - 2016
2016 - 2017



30,000
PEOPLE TRAINED



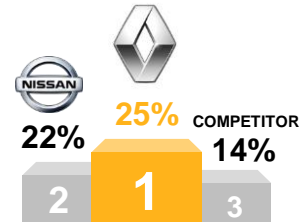
100%
TRAINED DEALERS

CUSTOMER SATISFACTION

- NEW ZOE: **400 km** NEDC autonomy
- **>90%** customer recommendations
- **>140K** customers

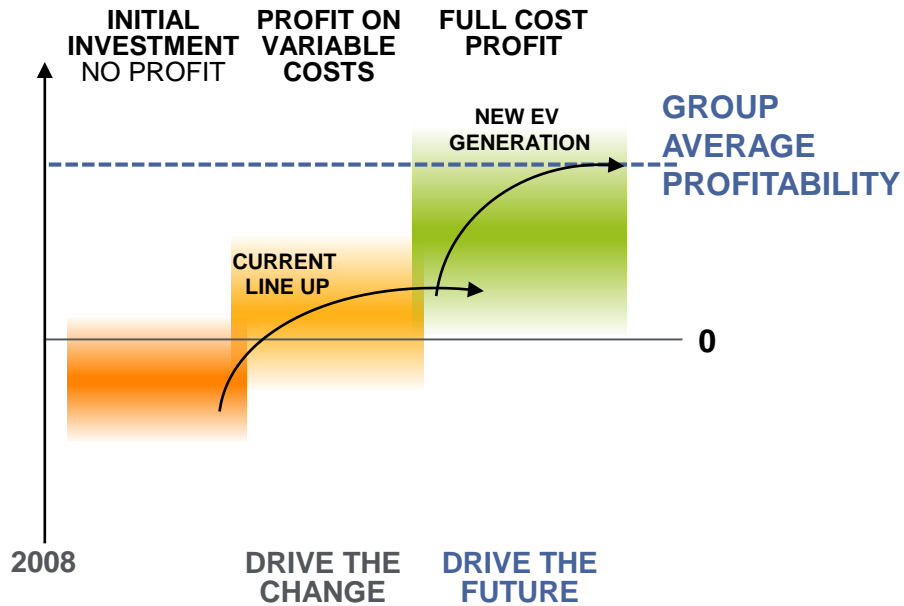


LEADER IN EUROPE








A ROBUST & PROFITABLE CORE BUSINESS BY 2022

THE OBJECTIVE



THE PLAN

-  **EXPAND**
OUR REACH
-  **ACCELERATE**
COST REDUCTION
-  **LEADER**
IN AFFORDABLE ELECTRIC MOBILITY
-  **PROVIDE**
EASY ELECTRIC LIFE
-  **GENERATE VALUE**
FROM ENERGY & MOBILITY SECTORS

EXPANDING OUR REACH

 **LINE-UP EXTENSION**

 **SEGMENT COVERAGE IN EUROPE**

 **MARKET EXPANSION**

2016

4 Models
1 Best seller





 **1** Key market
LEADER

2022

8 Models
2 Pillar models



  **2** Key markets
LEADER

    Develop next key markets

NEXT BIG CHALLENGES

Autonomy



Costs



Charge times



NEXT BIG CHALLENGES

Autonomy



Costs



Charge times



COSTS: BATTERY-LINKED DRIVERS WILL CHANGE THE EV-BUSINESS



**Increasing EV volumes
>> Decreasing costs**



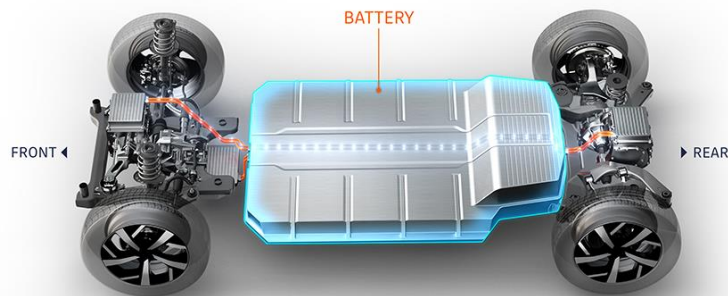
**Smart charging
>> Increasing battery value**



**2nd life battery = additional customer
>> Improving total cost of ownership**

ACCELERATE COST REDUCTION

3D SCALABLE ALLIANCE PLATFORM



80% of volume based on Alliance platform

- **-40%** R&D entry ticket
- **-30%** production cost

COST BREAKTHROUGH



- Battery pack cost (€/kWh) **-30%**
- New E-motor generation **-20%**

COSTS: BATTERY-LINKED DRIVERS WILL CHANGE THE EV-BUSINESS



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>> Decreasing costs

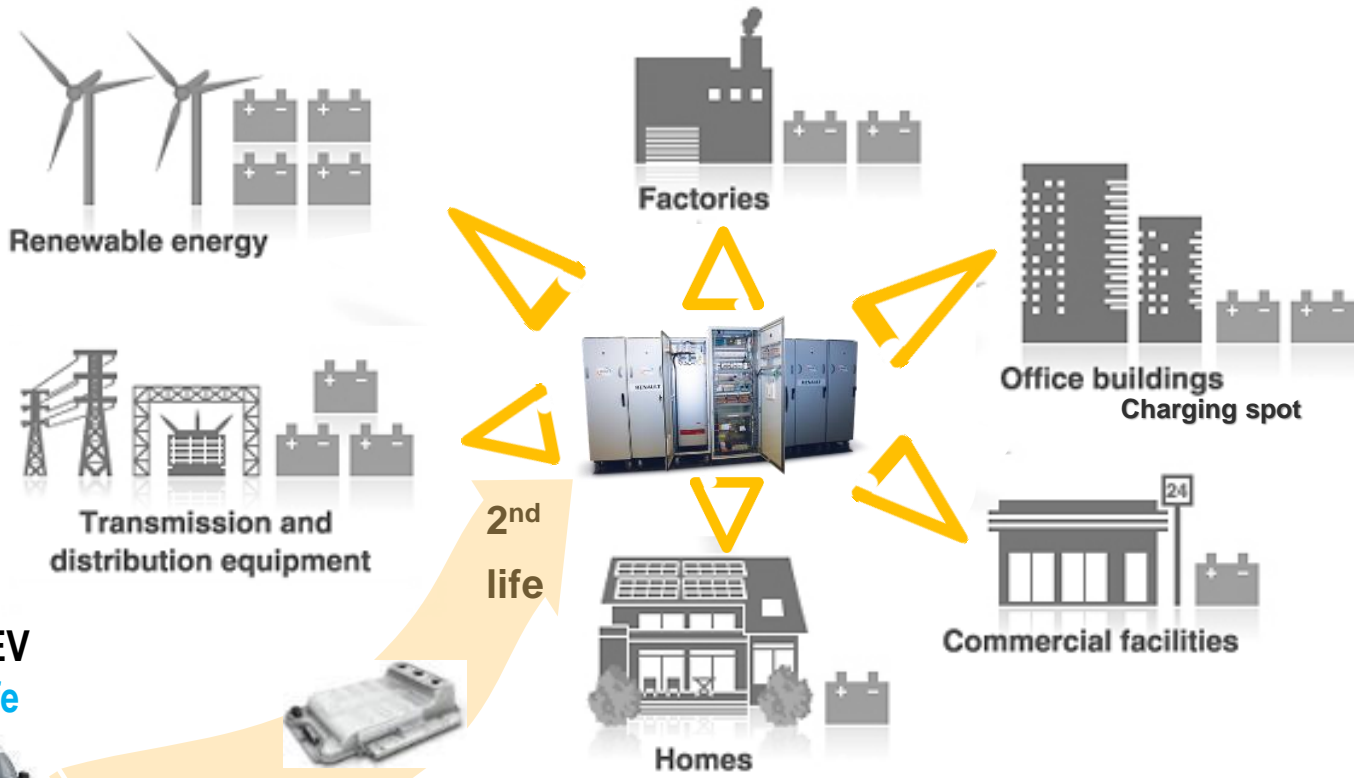


Smart charging
>> Increasing battery value



2nd life battery = additional customer
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ENERGY STORAGE CONCEPT WITH 2ND LIFE BATTERY



After the automotive life, EV batteries have a **second life**



ENERGY STORAGE CONCEPT WITH 2ND LIFE BATTERY



POWERAULT

RENAULT BUILD A PRODUCT LINE UP THROUGH PARTNERS



Powervault

Develops & manufactures a fully-integrated solar energy storage system for home

- British start-up
- Home solar storage specialist
- Product : 2 to 6kWh storage unit



Connected Energy

Accelerating new approaches to grid load management

- British company
- Product : award-winning E-STOR technology
- Partner : Parker



Bouygues

Develop advanced System to store energy in building (B4B : Batteries for Buildings)

- European Program H2020
- 10 partners : Bouygues, Nissan, BAUM, ASM ...
- 13M€ total costs (Renault : 1,2M€ / 70% granted)

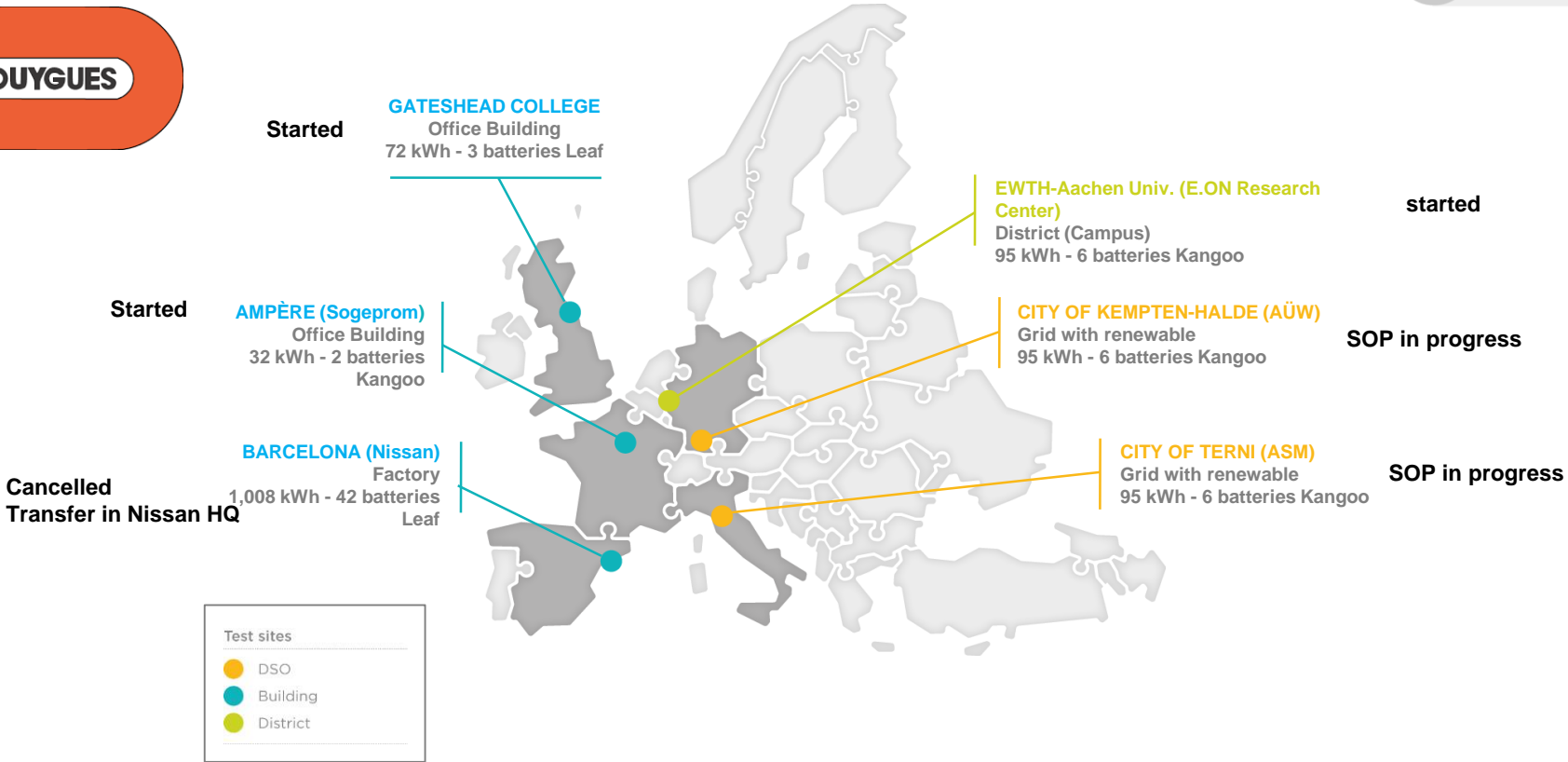


Large scale storage

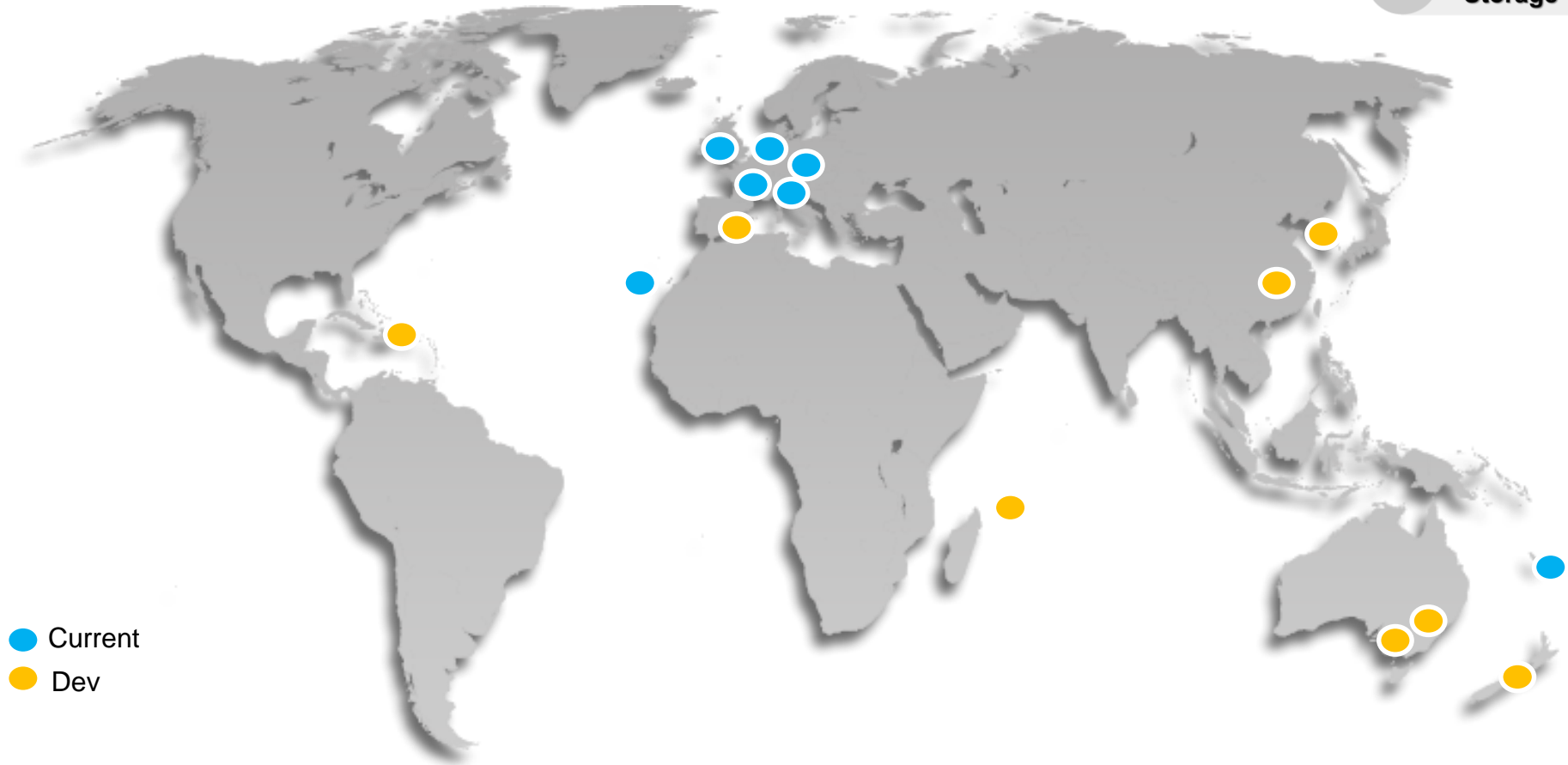
Under construction



EXAMPLE : 6 PILOT SITES IN EUROPE



2nd LIFE STORAGE : CURRENT PROJECTS & DEV



- Current
- Dev

COSTS: BATTERY-LINKED DRIVERS WILL CHANGE THE EV-BUSINESS



Increasing EV volumes
>> Decreasing costs



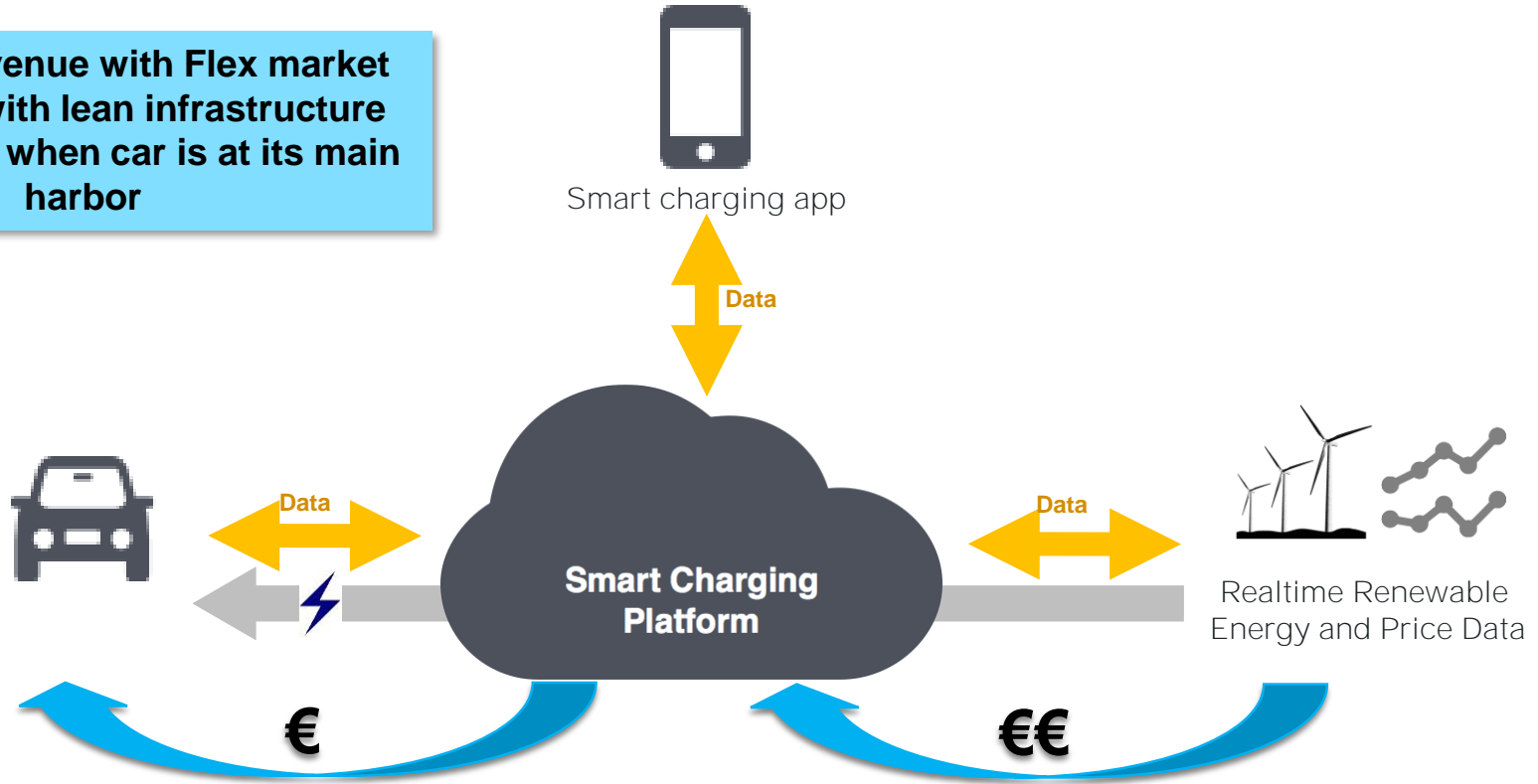
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SMART CHARGING : REVENUE FROM GRID SERVICES

Generate revenue with Flex market and EPEX, with lean infrastructure (AC Charger) when car is at its main harbor

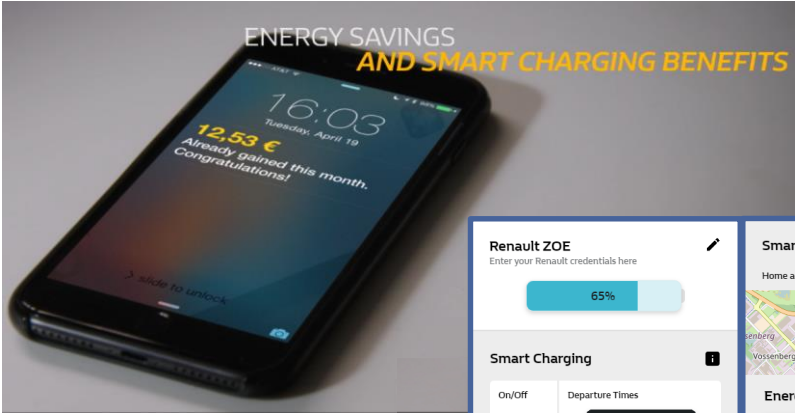


GENERATE VALUE FROM ENERGY & MOBILITY SECTORS

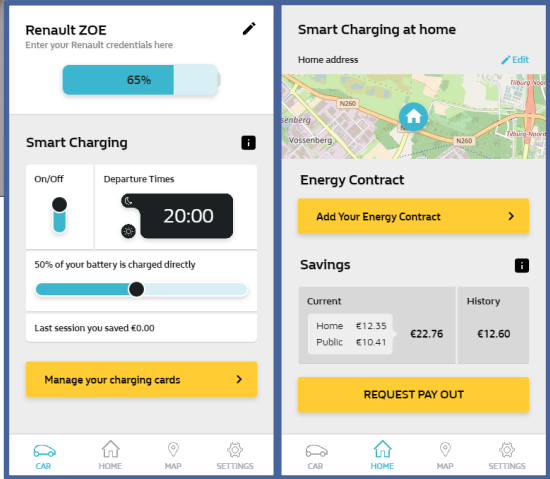
SMART CHARGING



Pilot home charging to match electricity operators needs
25% stake in JEDLIX



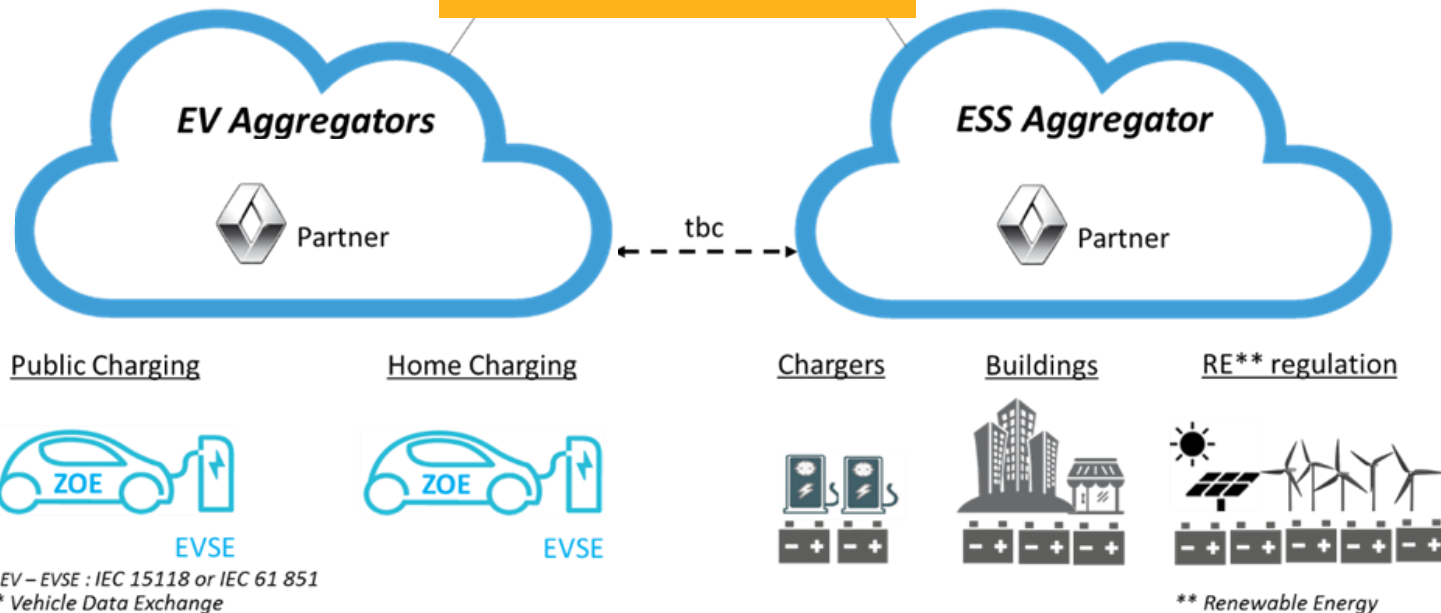
Launch of **Renault Z.E. Smart Charge** Apps.



SMART CITIES & ISLAND CONCEPT

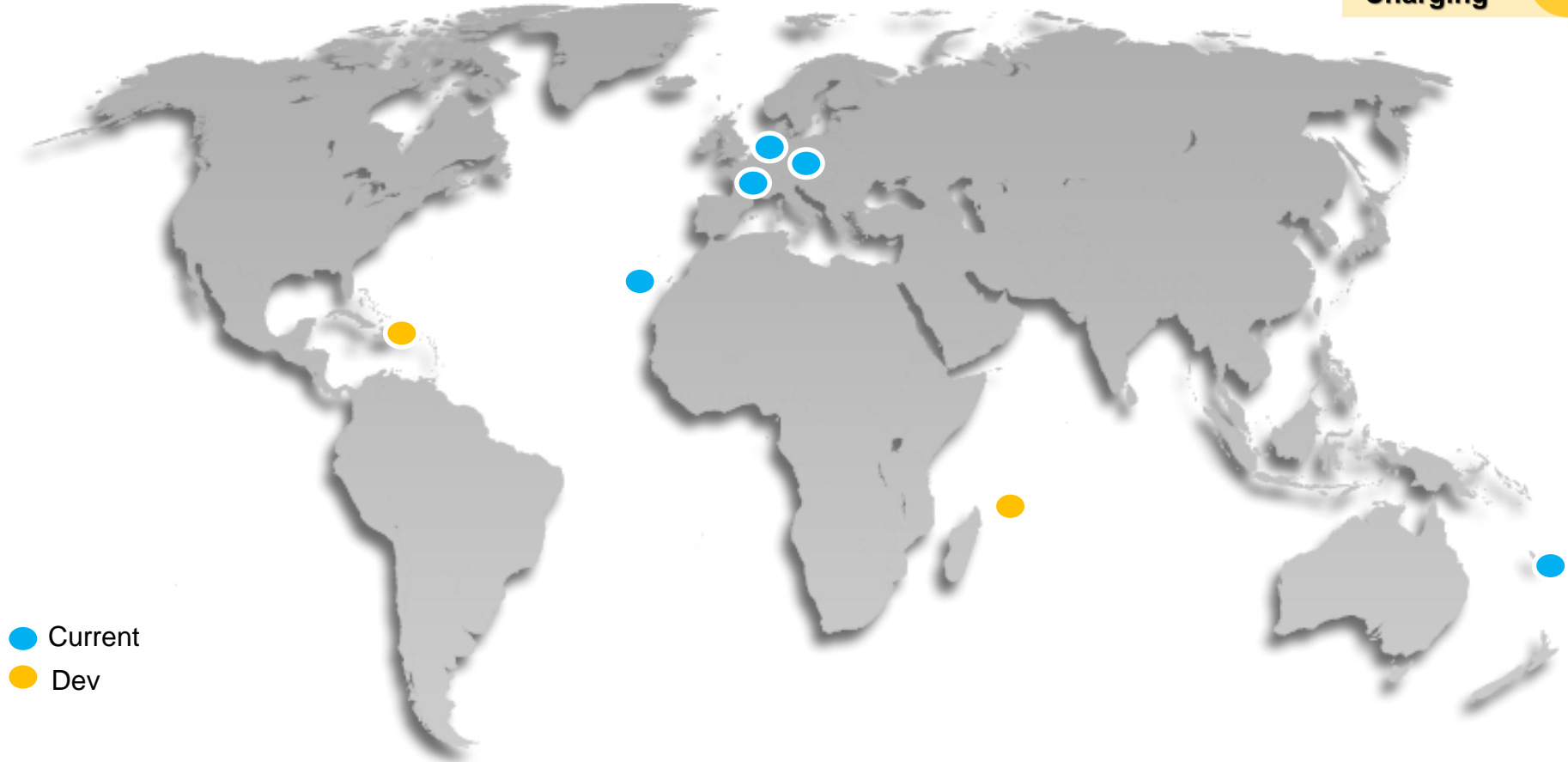
30 000 ZOE
= 1,2 GWh of storage

**A Virtual power
plant for Utilities**



SMART CHARGING : CURRENT PROJECTS & DEV

Smart
Charging



- Current
- Dev



THANK YOU