Elsa

ENERGY LOCAL STORAGE ADVANCED SYSTEM

ELSA - VIENNA

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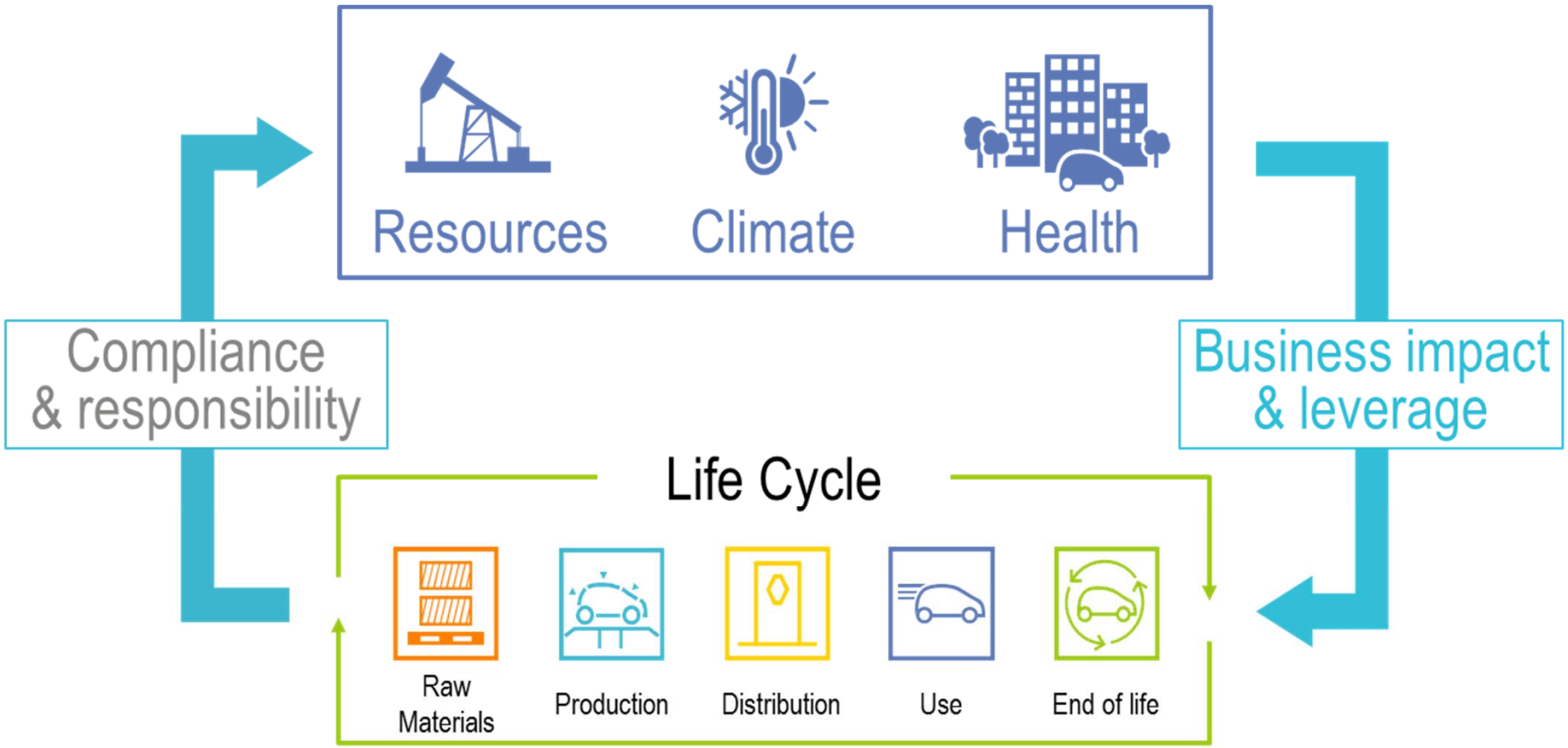
RENAULT

THE 3 MAJOR ENVIRONMENTAL STAKES OF THE AUTOMOTIVE INDUSTRY



REGULAR GROWTH OF THE EV MARKET (TIV)

TREND

2017

0,5% (WORLDWIDE)
0,6% (EUROPE)
2,2% (CHINA)

2020

4% (WORLDWIDE)

JP MORGAN

2025

9% (WORLDWIDE)
JP MORGAN

ESTIMATE

15% (WORLDWIDE)
DAIMLER / VW

FORECASTS

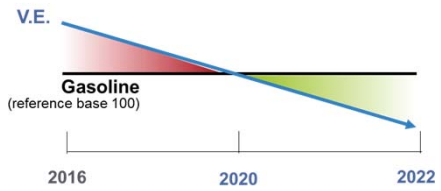
MODELS GROWTH OEM: >50 GLOBAL BEV *2022*

TIPPING POINT VE vs ICE : 2020-2025

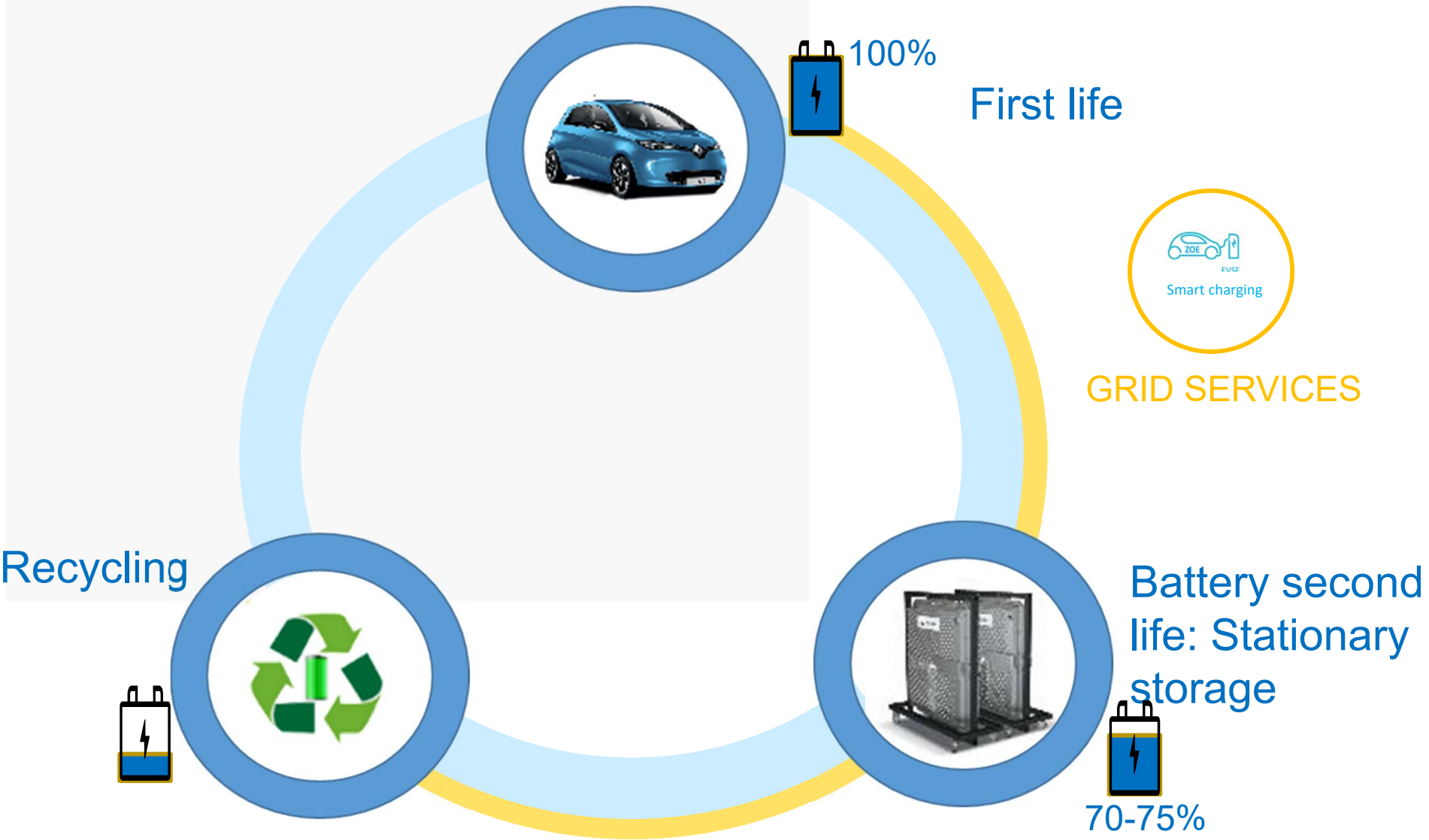
ALL CAR SEGMENTS : 2021

TOTAL COST OF OWNERSHIP
EV vs ICE

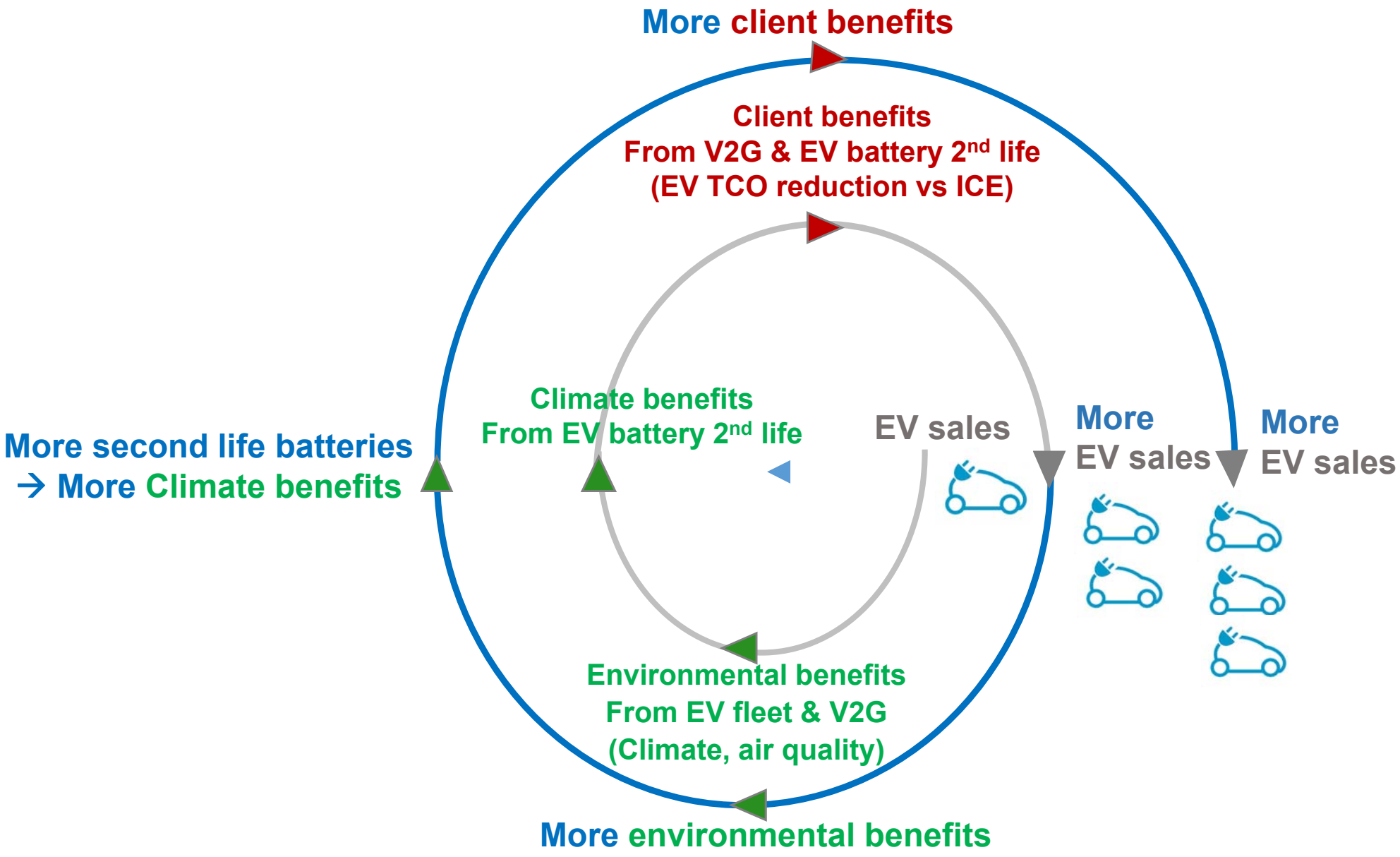
B-segment – 3 YEARS – 12,000km/y
Including reduction of incentive



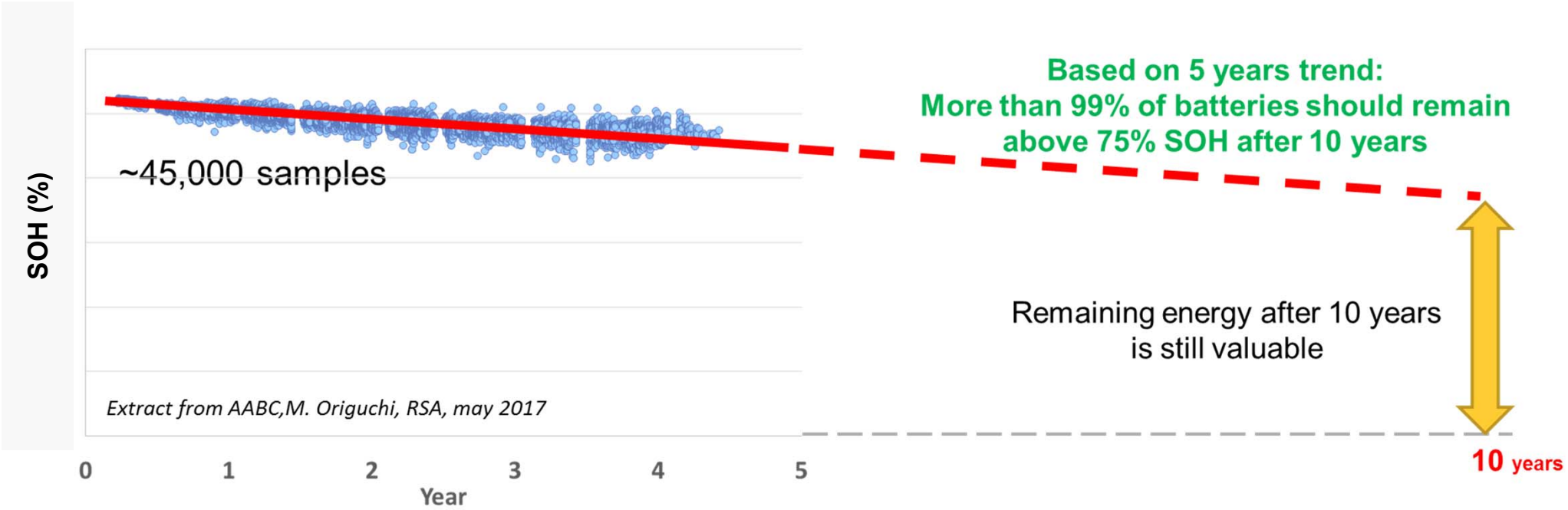
OPTIMIZED LIFE CYCLE OF AN EV BATTERY



THE VIRTUOUS LOOP OF ELECTRIC VEHICLE



REAL CUSTOMERS FIELD DATA : Battery Durability



Real data shows 2nd life as concrete opportunity for aged battery with high remaining energy

Moreover, **ageing trend is expected to be even better in 2nd life ESS applications** based on the 3 main ageing triggers analysis shown on next slides :

- **Power demand**
- **SOC (State Of Charge)**
- **T°C histogram**

2nd life batteries in ELSA System

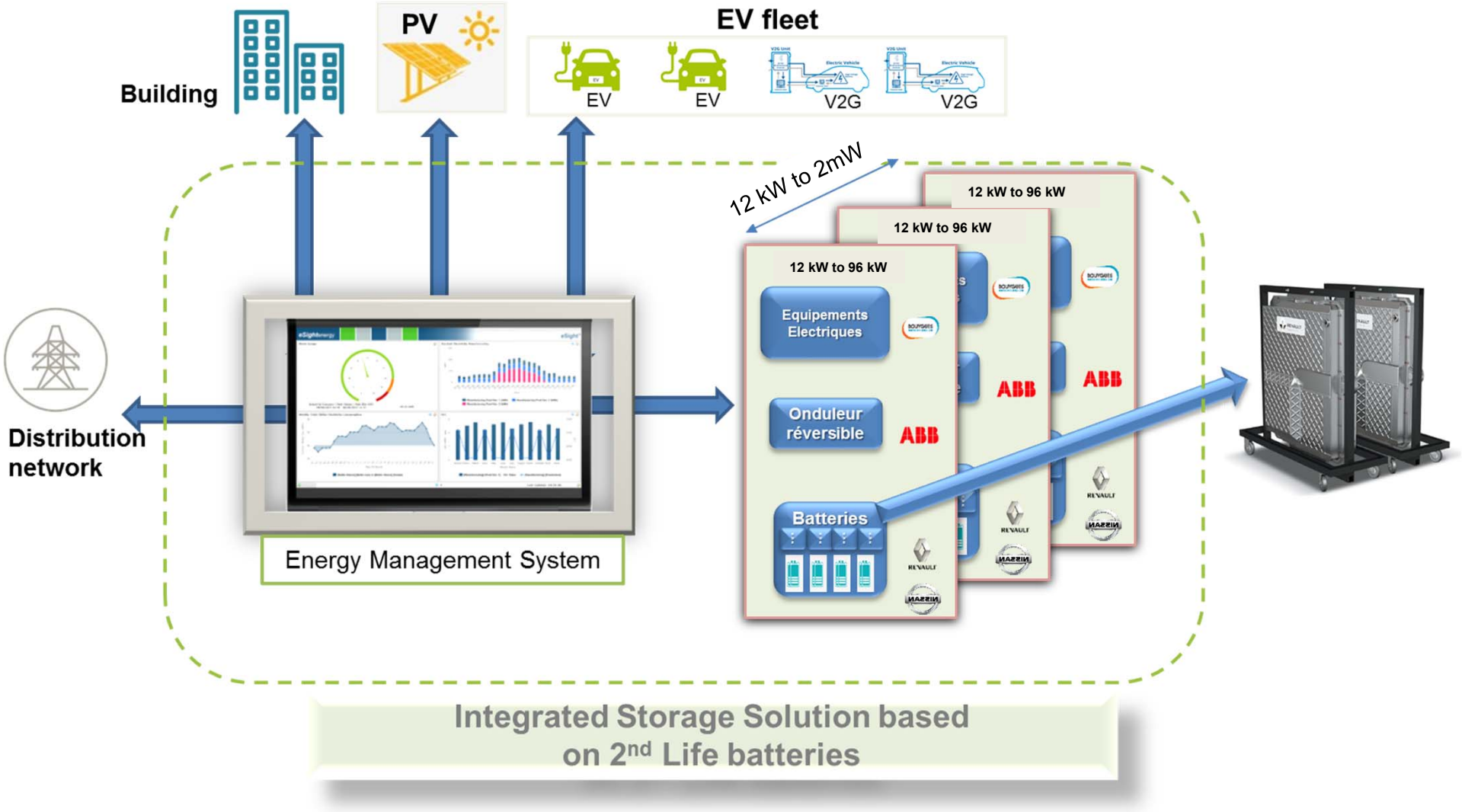
- No modification on vehicle battery pack
- Specific SW developed to interface with the original BMS of the battery
- Quality control of all the batteries before integration in Stationary Storage
- Competitive price

ELSA STORAGE SYSTEM :

- **Storage system based on Renault & Nissan 2nd life batteries**
- **Modular solution from 12kWh to 2 MWh (Power ➔ 12 kW – 2MW)**
- **Electrical and electronic architecture to manage different types of batteries within the same system**
- **Controller to manage charge and discharge instructions**
- **Supervision system to ensure the availability and security of the storage system**
- **Communication interface to work with an EMS ***

(*) Energy Managment System

ELSA STORAGE SYSTEM
an integrated solution for energy storage



CONCLUSION

- **ELSA project is a success thanks to EU**
- **ELSA STORAGE SYSTEM is a new approach based on 2nd life Batteries**
- **ELSA STORAGE SYSTEM offers a flexibility solution**
- **ELSA STORAGE SYSTEM is promising …. Sales already started**

THANK YOU

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