

Taking apart the future

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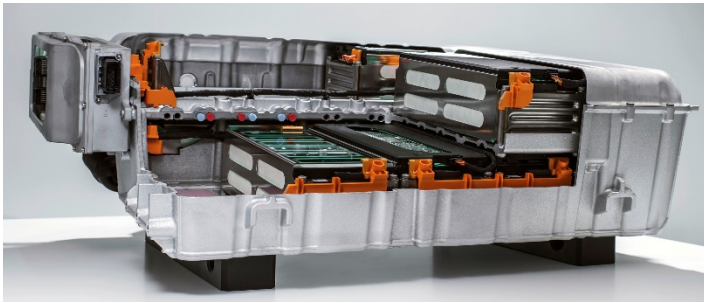
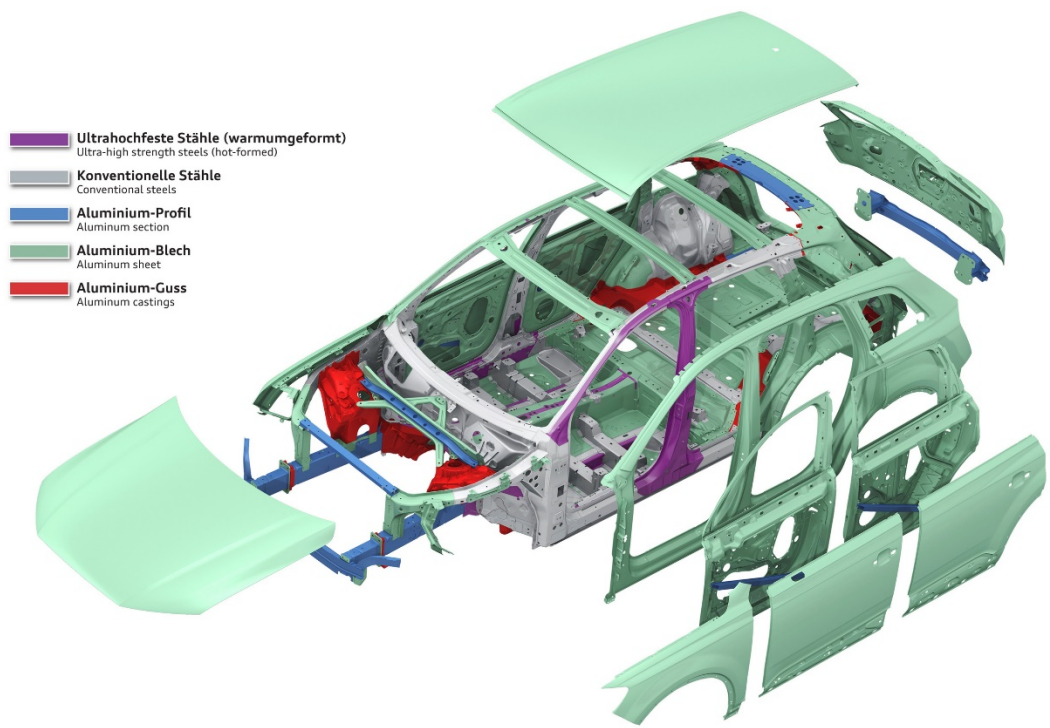
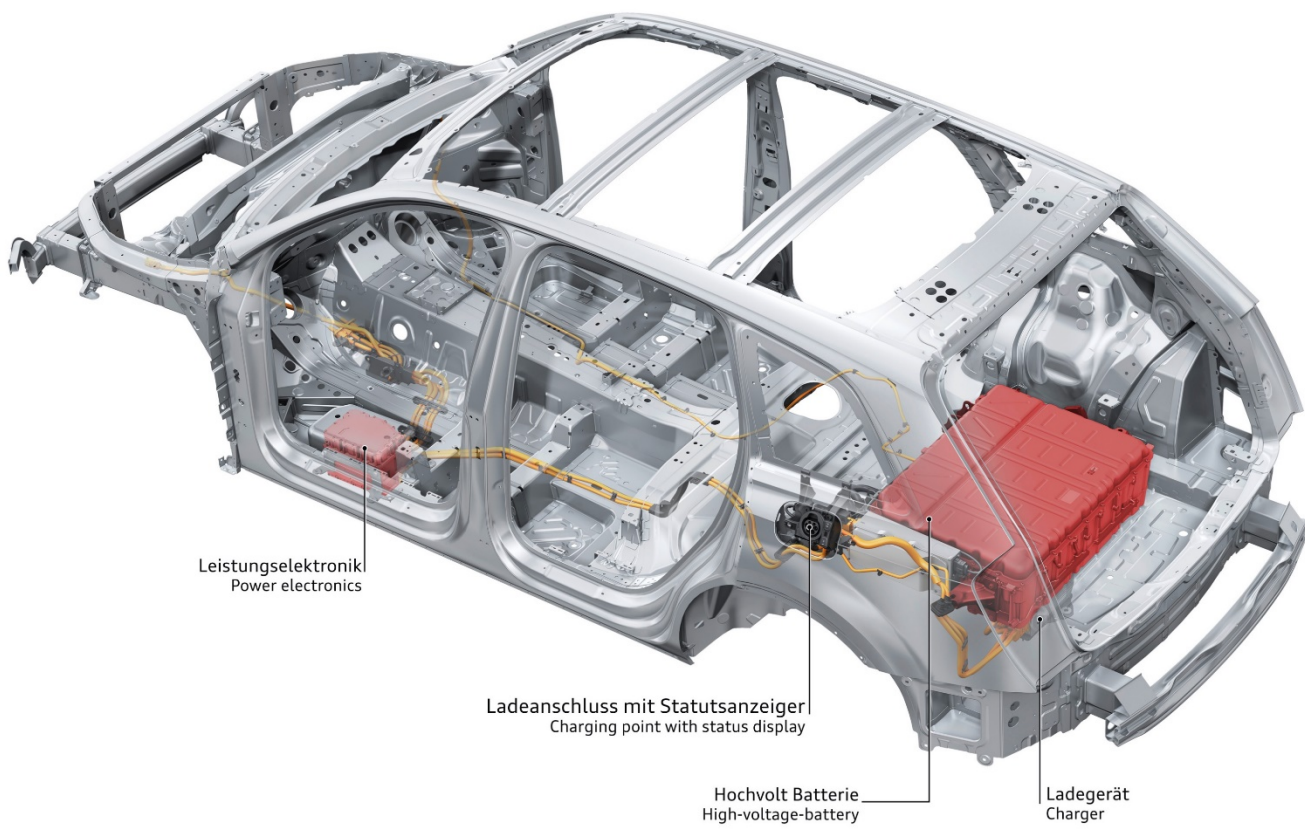


What we are going to see

1. OEM business
2. Electrification
3. Real challenges



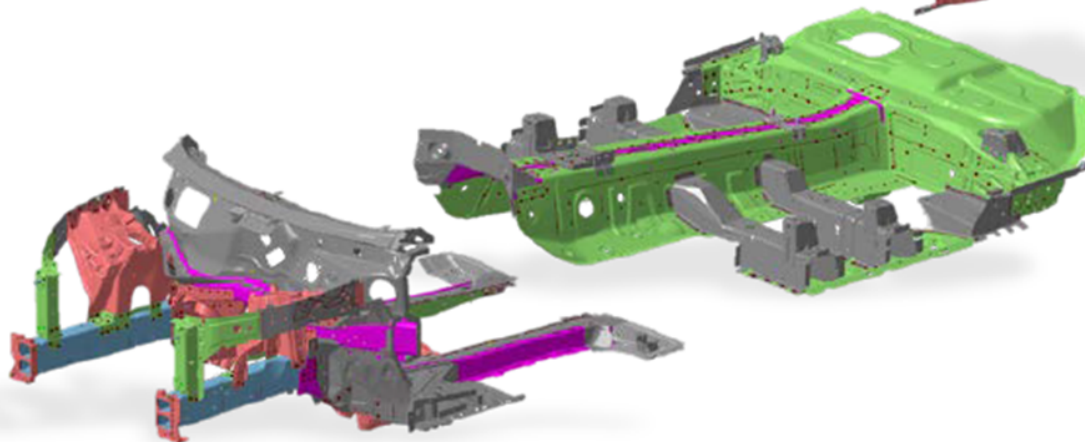
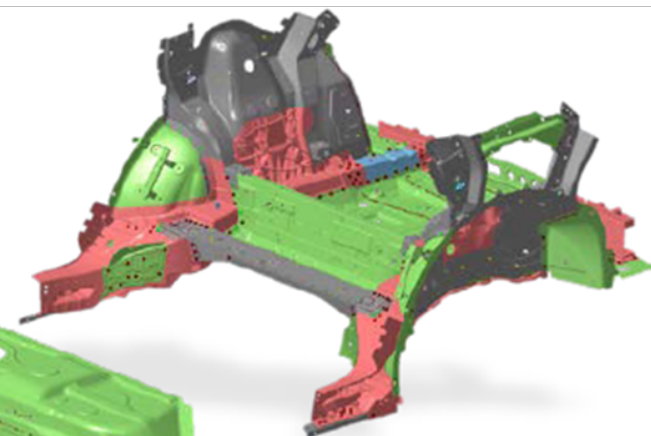
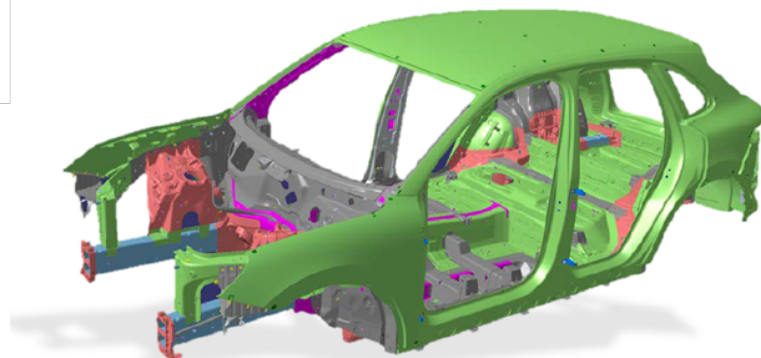
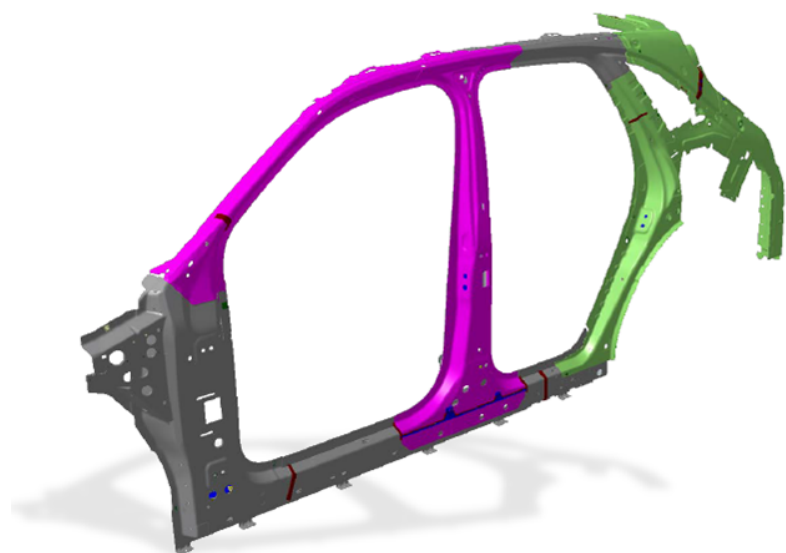
Before we start...

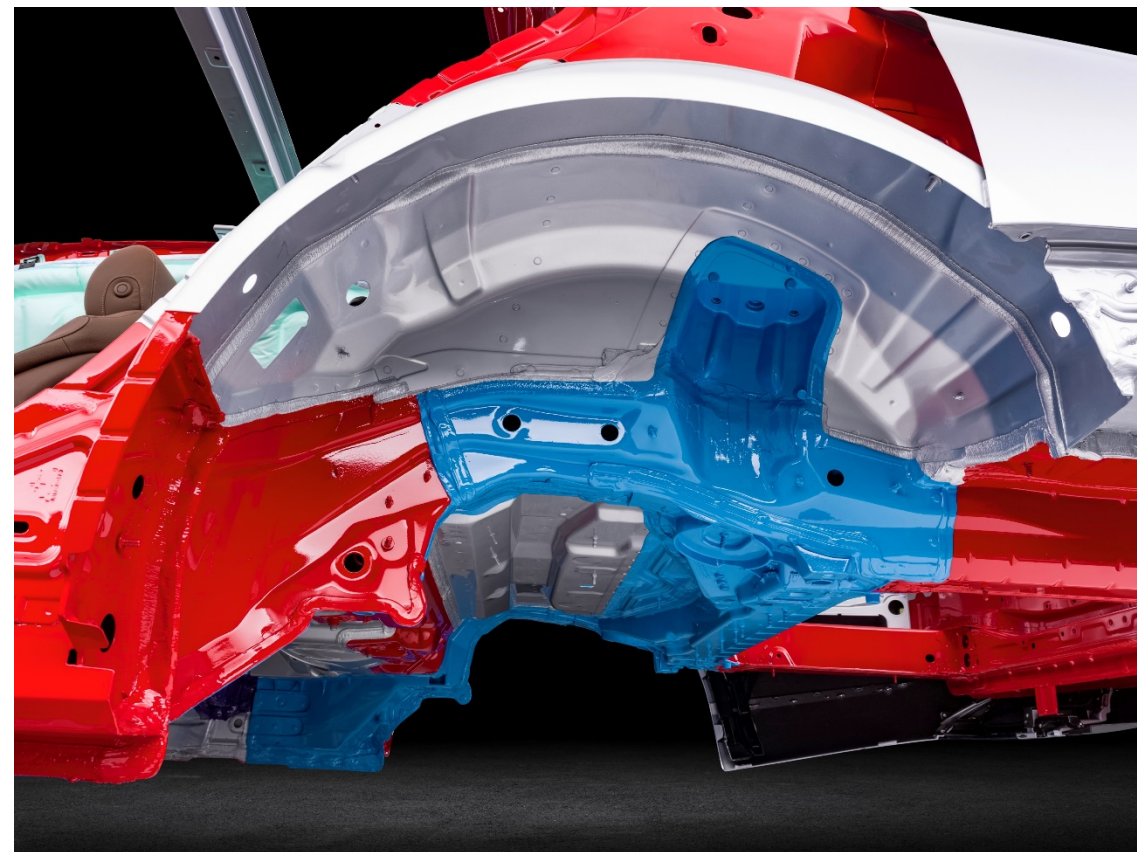
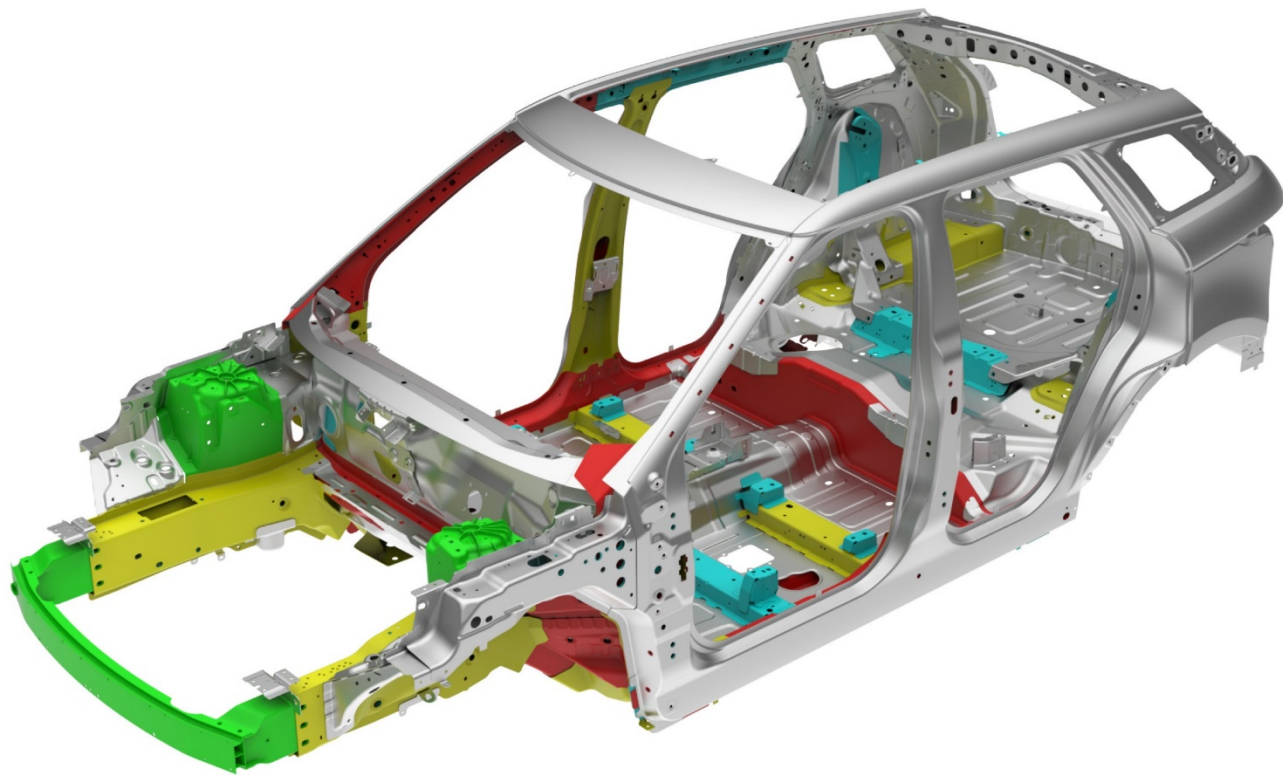


The OEM business

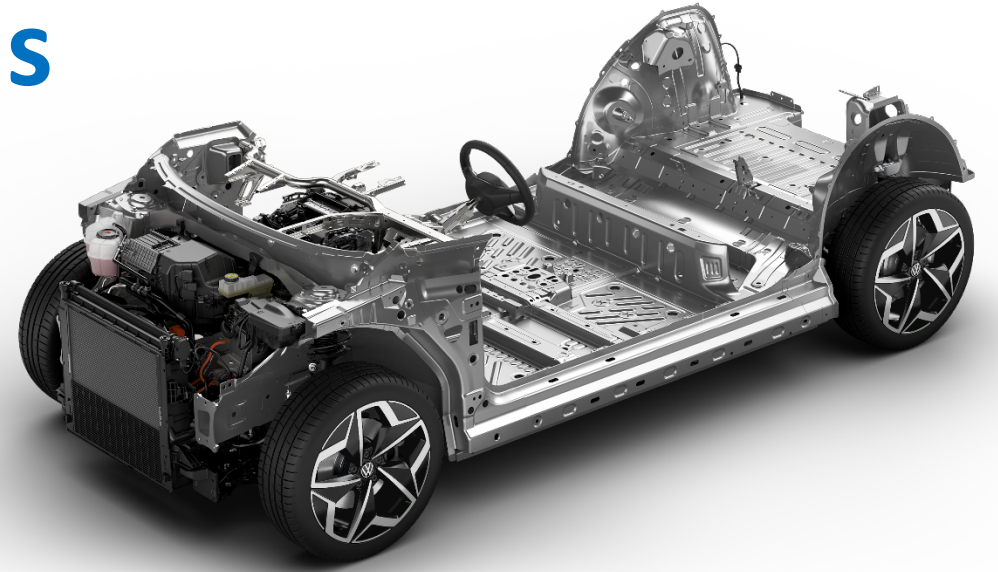


■ Steel sheet (cold) ■ Steel sheet (hot) ■ Aluminium sheet ■ Extruded profile ■ Aluminium casting





The real challenges - platforms



2010 2019

BMW	5	2: UKL (BMW + Mini), CLAR
Mercedes-Benz	6	2: MFA, MRA
Volkswagen Group	5	4: MQB Evo, MEB, MLB Evo, MSB



Models:

2010

2019

Body shapes:

2010

2019

Audi

11

16 (+5)

14

23 (+9)

BMW

9

19 (+10)

17

26 (+9)

Mercedes-Benz

11

19 (+8)

16

31 (+15)



Electrification

95



95

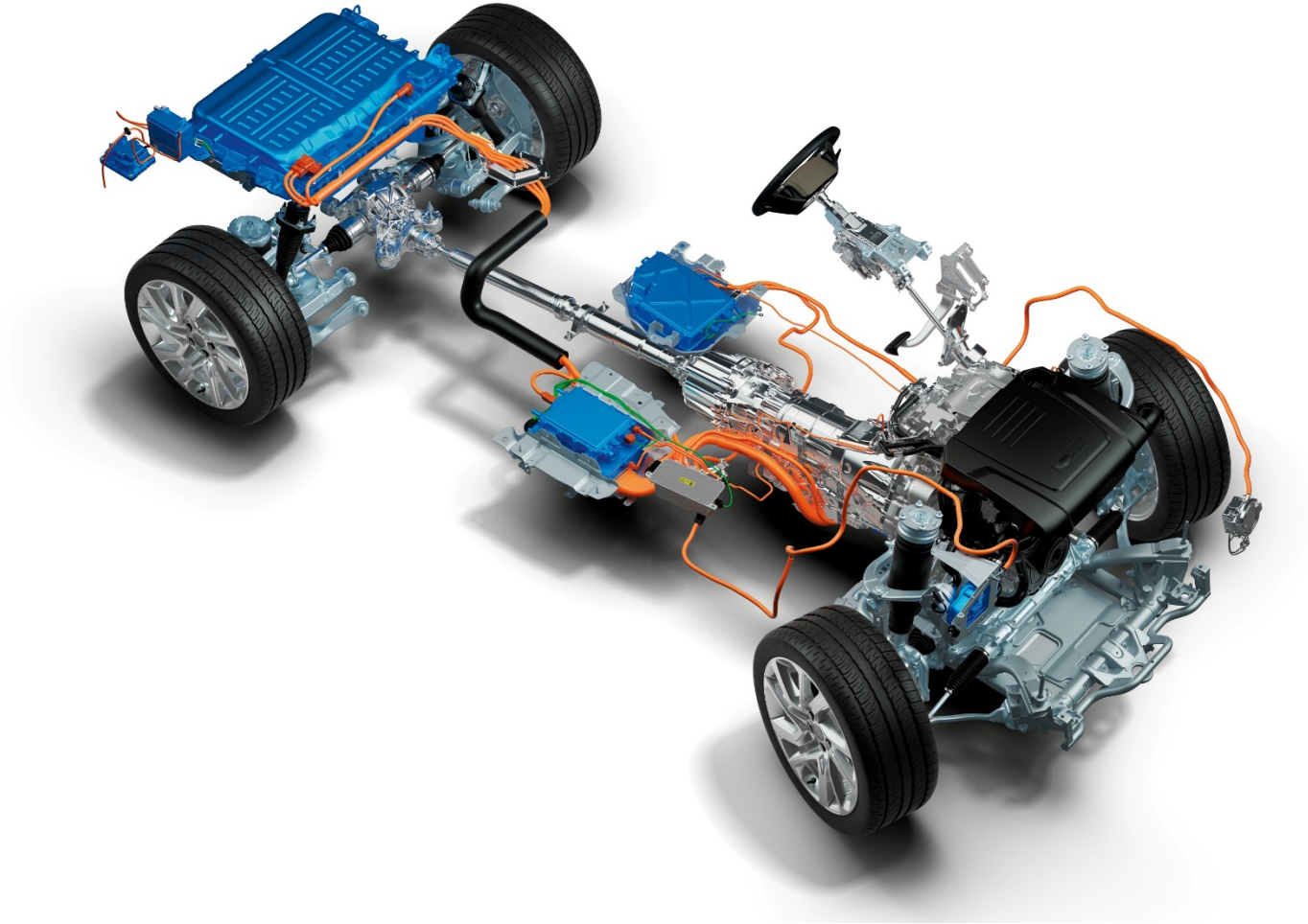
g/km CO₂

€ per gramme per vehicle



Ultra low emission zone - London





1 to 2 kWh, Hybrid

5 to 15 kWh, PHEV

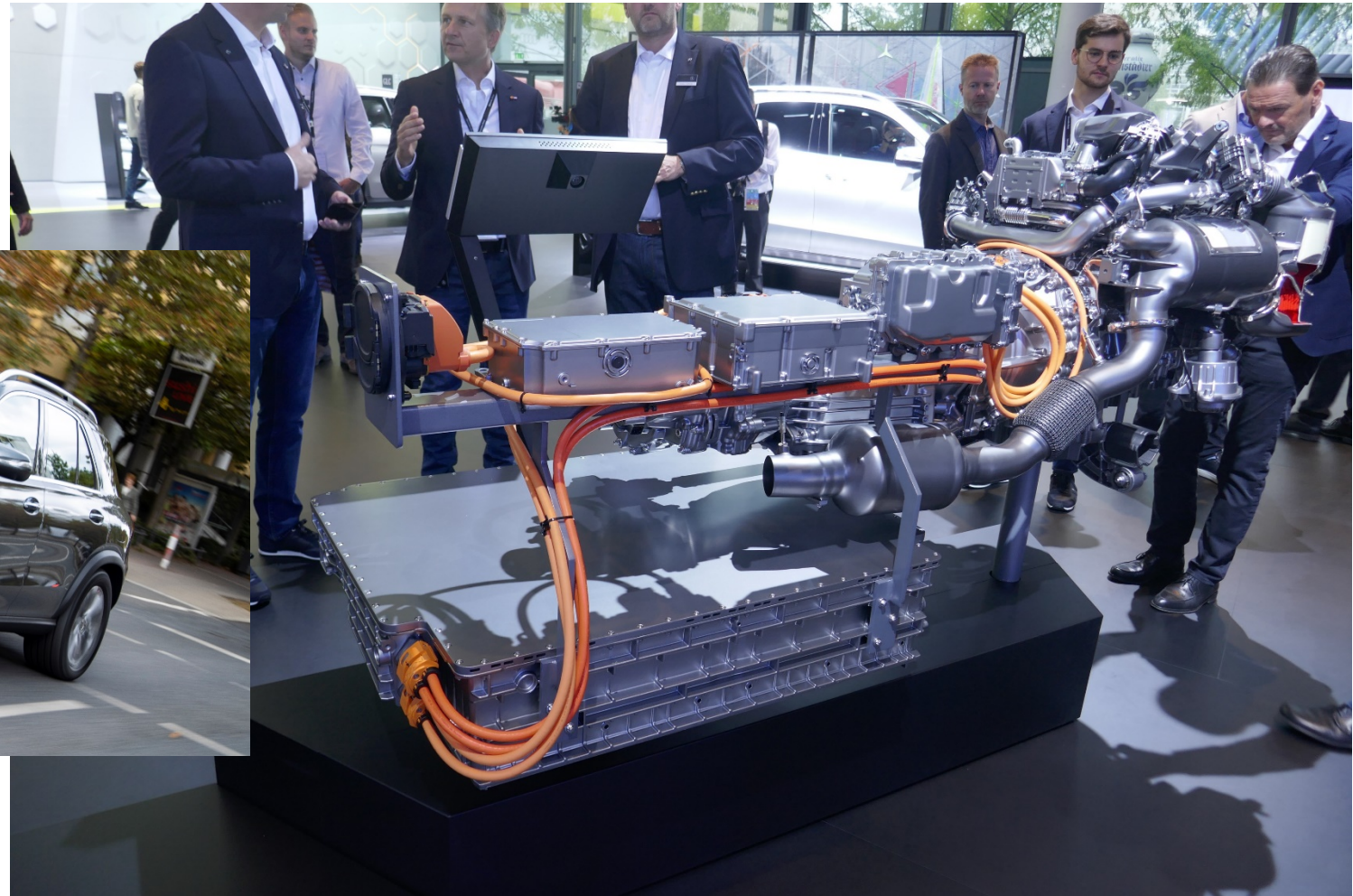
20 to 100 kWh, EV



Mercedes-Benz
A class W177 PHEV
B class W247 PHEV
15.6 kWh



Mercedes-Benz GLE W167 PHEV 31.2 kWh



VWG platform strategy to 2025

MLB evo
Audi e-tron



J1 Performance Platform
Audi e-tron GT concept



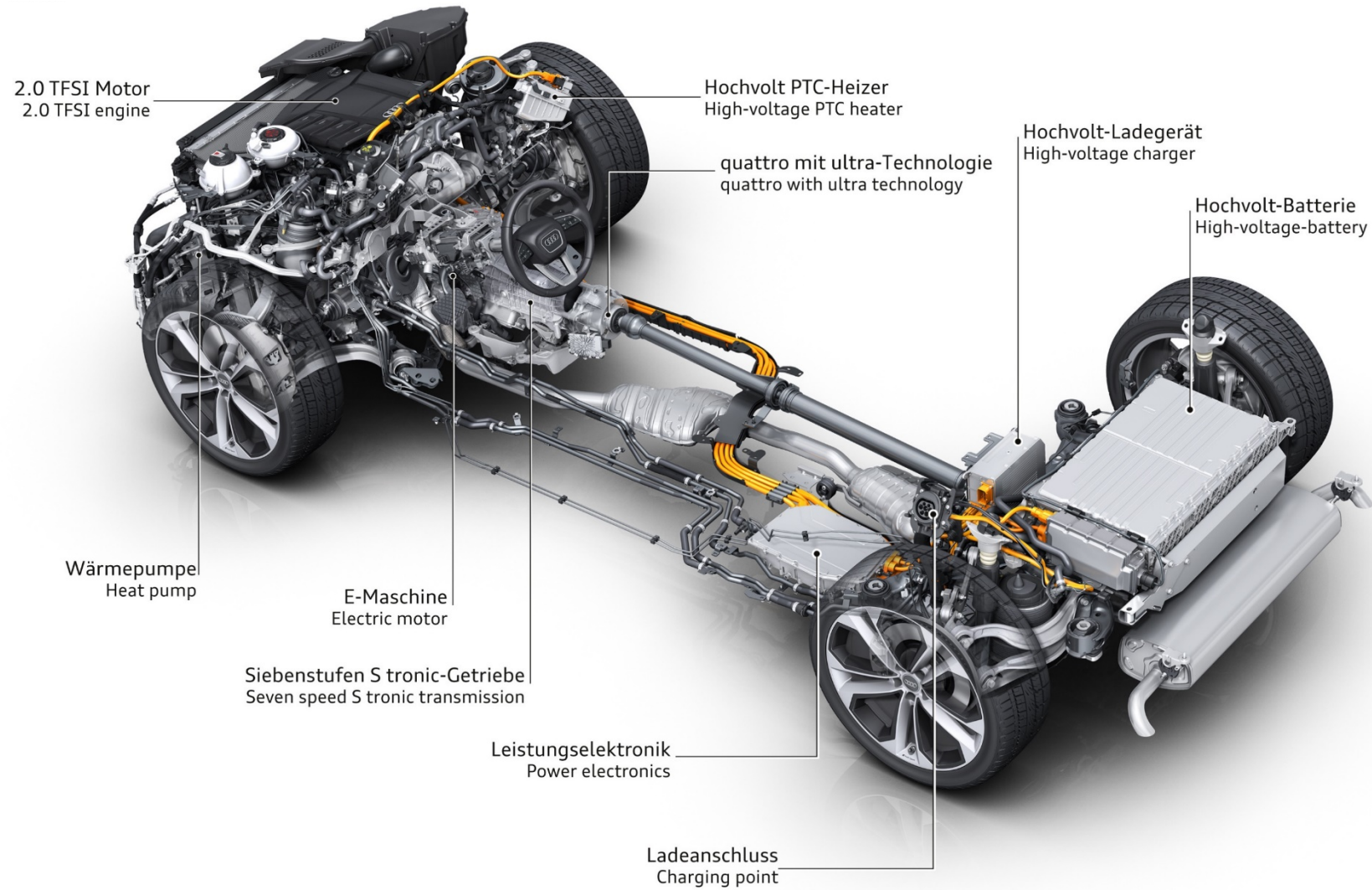
**MEB Modular
Electrification Toolkit**
Audi Q4 e-tron concept



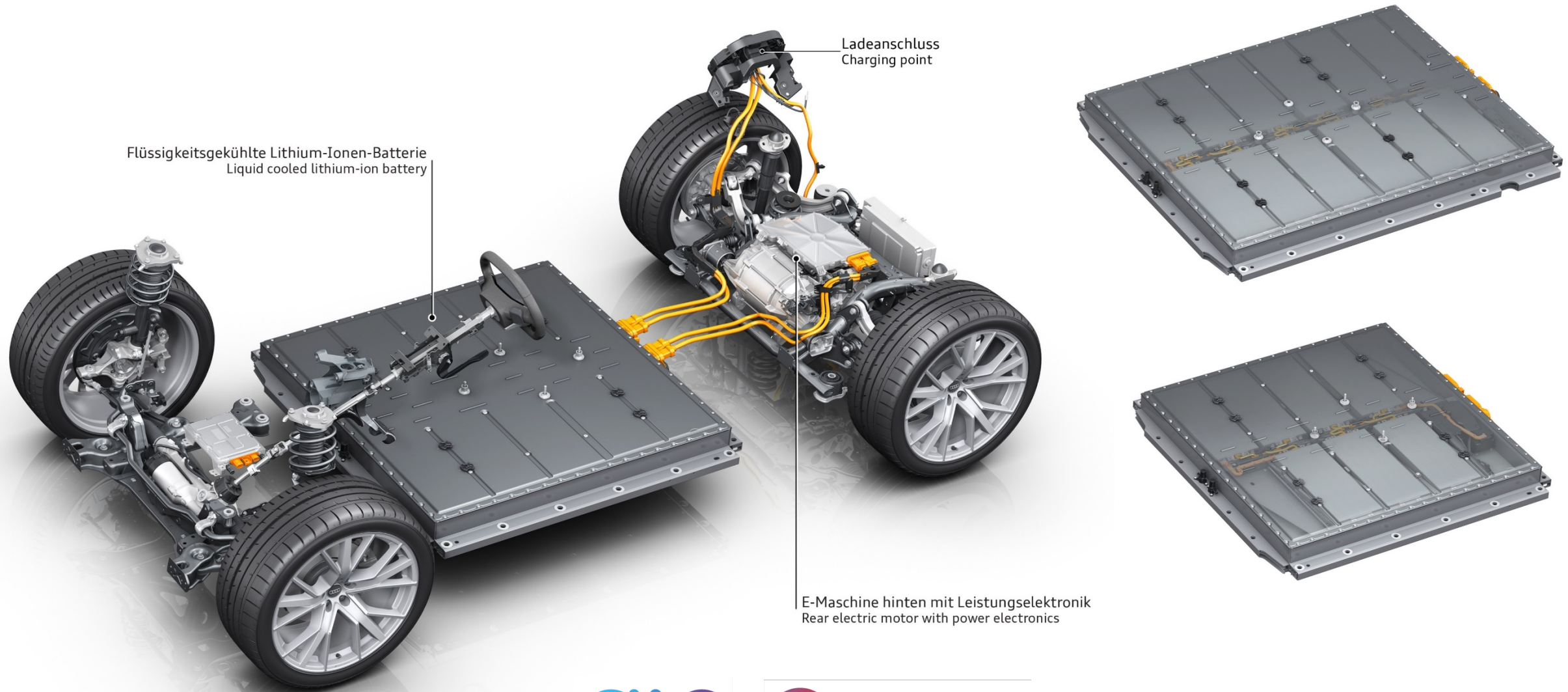
Premium Platform Electric PPE



VWG platform strategy – PHEV conversion



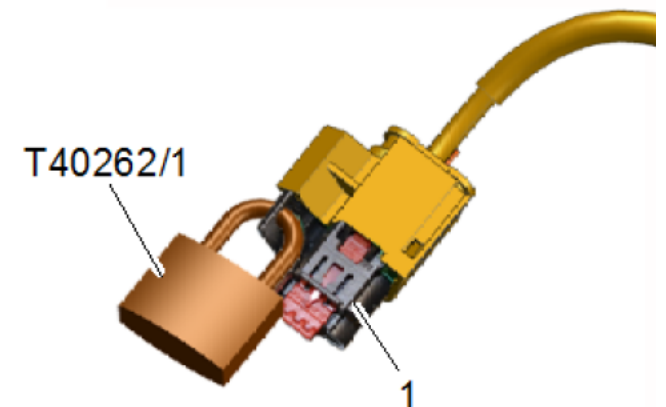
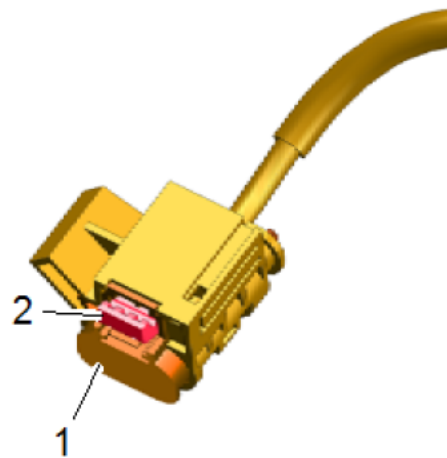
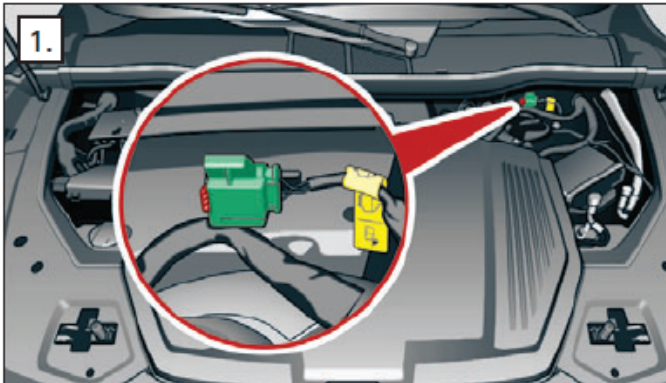
VWG platform strategy – pure EV ‘kit’



High voltage system shut down

1. Ensure the vehicle is off.
2. Connect the diagnostics unit > disconnect HV system.
3. Access safety plug > disassemble > padlock.

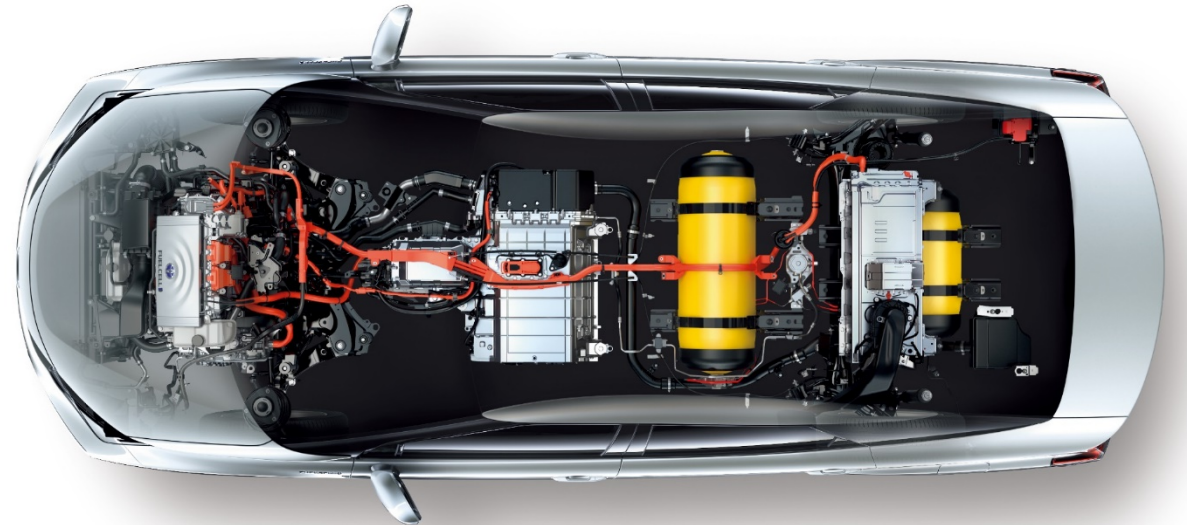
Note! HV system reconnection is only via diagnostics



Real challenges



Don't forget hydrogen....



2019



Pure electric drive

1. 20% energy density
2. 30% energy density > soon
3. Cost:
 - \$100 / kWh minimum
 - \$500+ / kWh for latest

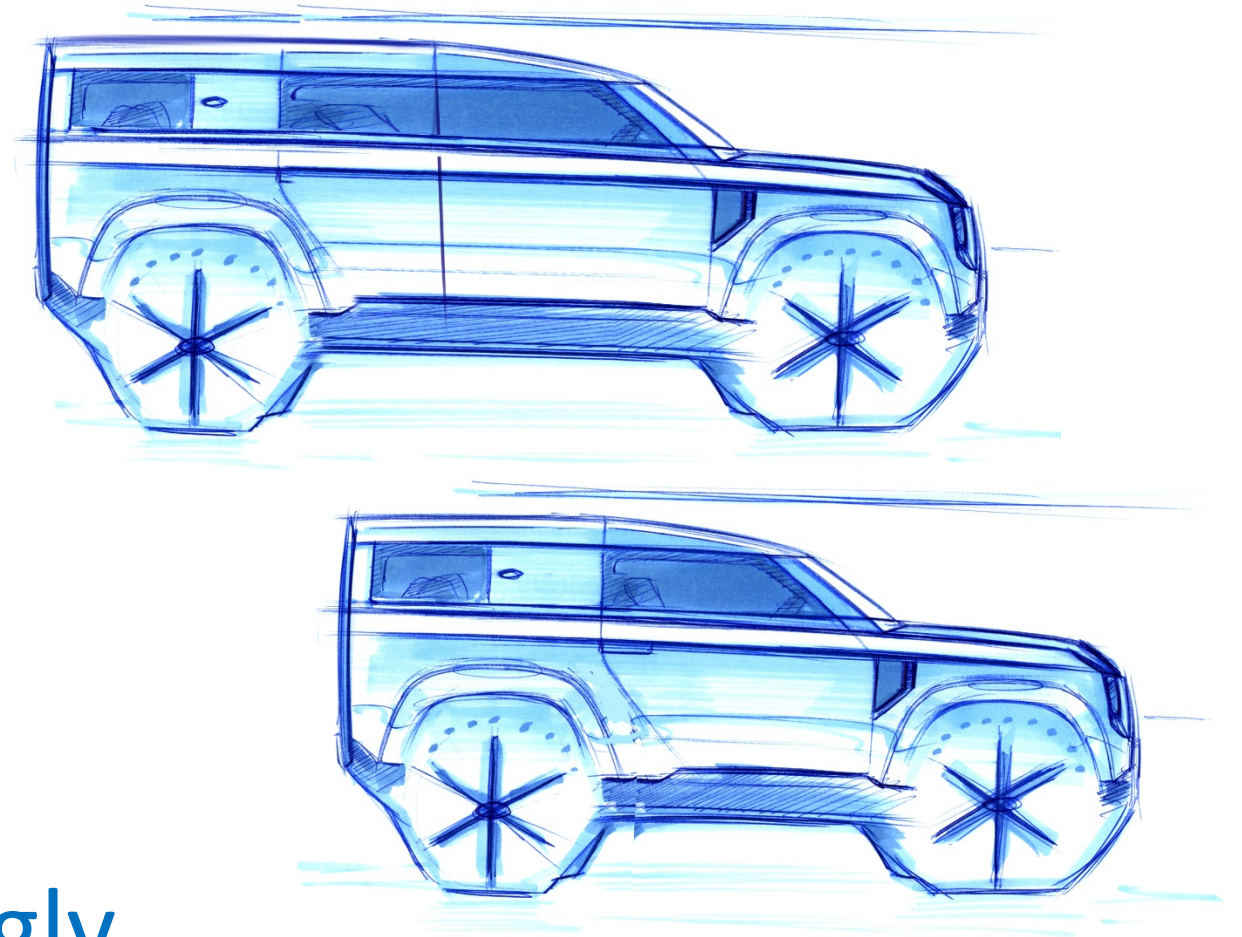
Why carry a big battery?



Future skills:

- Electronics
- Software
- System networks
- 'Big Data' analysis

Recruit or invest accordingly



What we covered today

1. OEM business
2. Electrification
3. Real challenges



You have been listening to:

Taking apart the future

by Andrew Marsh, Director, AIC Ltd

Thank you!

