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AKTIENGESELLSCHAFT

Leading the Transformation.

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Chairman of the Board of Management,
Volkswagen AG

CAPITAL MARKETS DAY 2019

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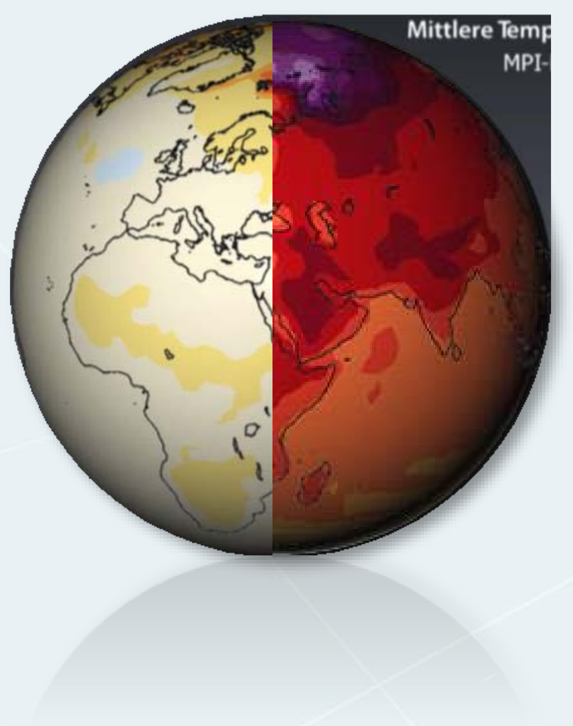
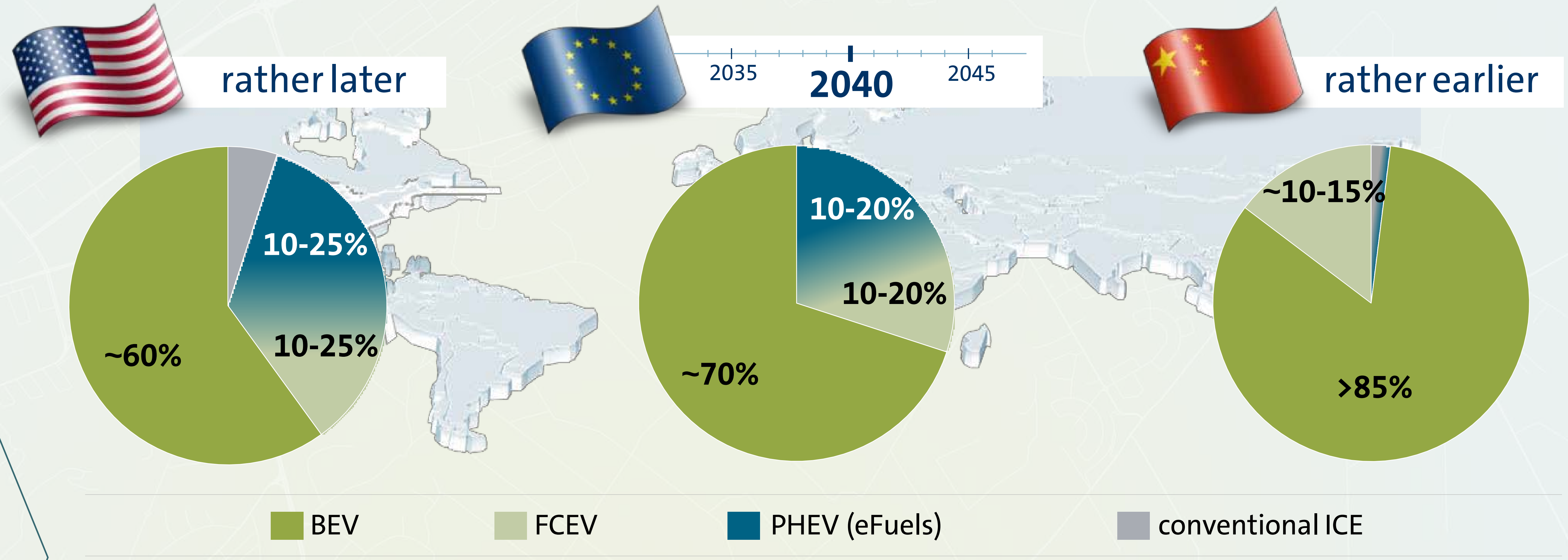
E-MOBILITY IS THE ONLY WAY FORWARD TO ACHIEVE CLIMATE TARGETS



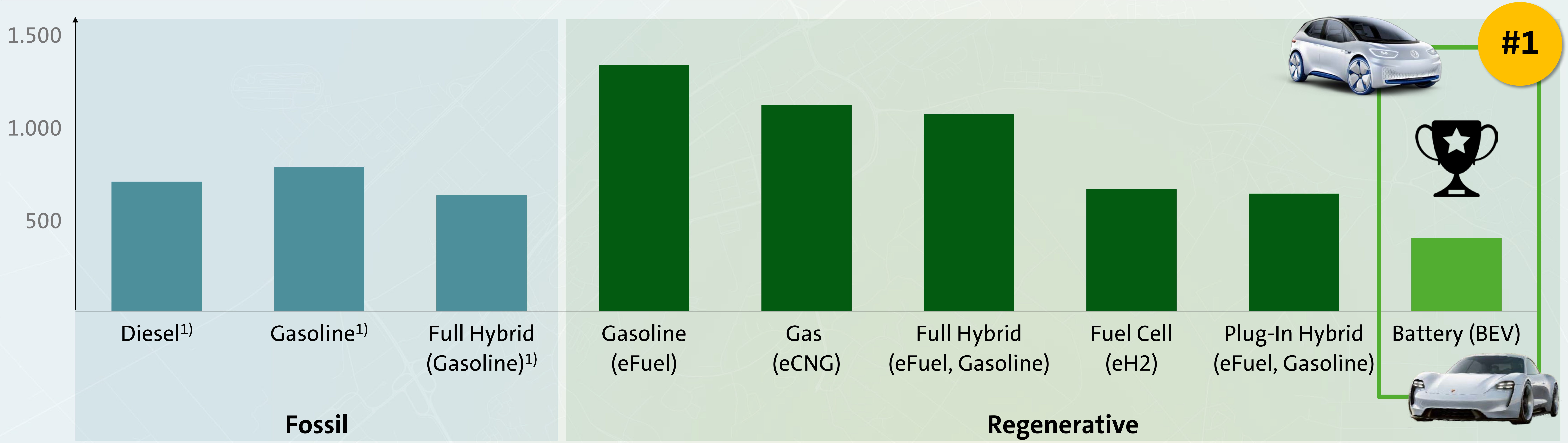
- Our Target:
  CO_2 neutral fleet by 2050



- Increase share of **future technologies – Focus E-Mobility**
- Implementation of further measures to become **CO_2 neutral**

PRIMARY ENERGY DEMAND IS LOWEST WITH BEVS

PRIMARY ENERGY REQUIREMENT IN WH/KM FOR LIFECYCLE



THE MODEL OF THE ENERGY BALANCE LIFECYCLE

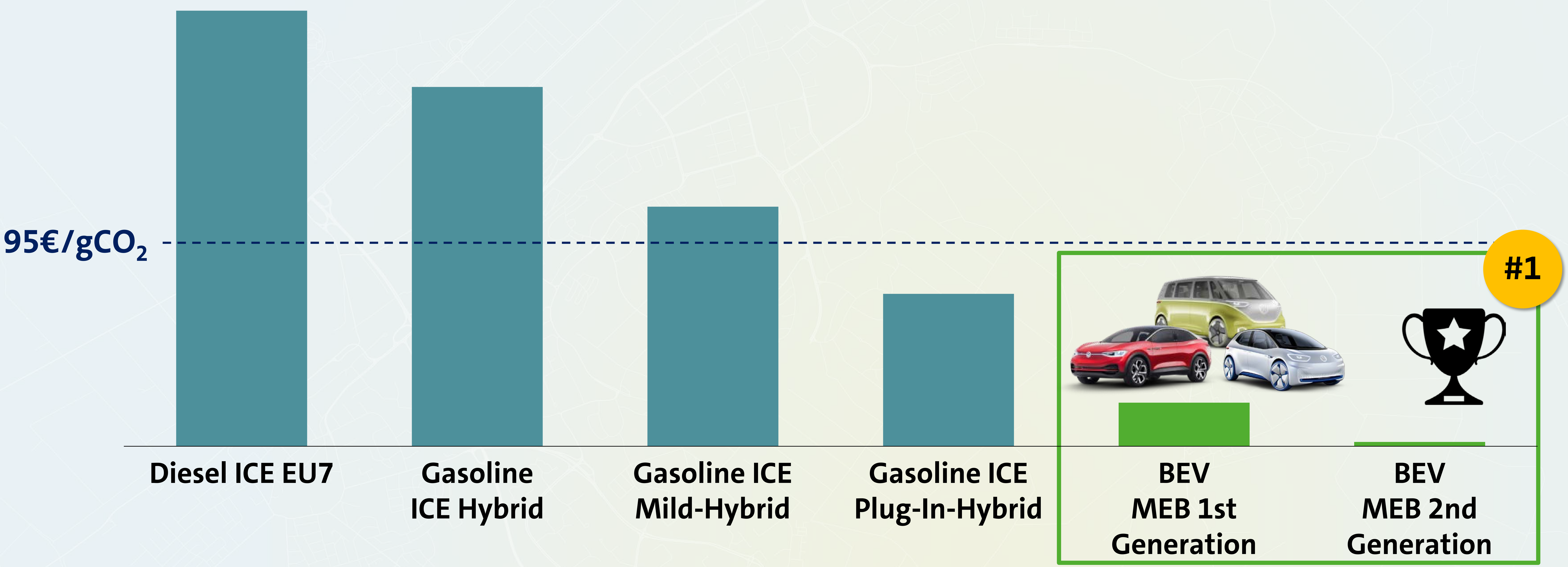
CO_2 NEUTRAL

Vehicle development → Vehicle production → Fuel production → Fuel consumption → Recycling

Example: A-Segment 200.000 km, CO_2 emissions & energy over lifecycle of vehicle and fuel
[1)] not fully comparable with energetic base, not CO_2 neutral

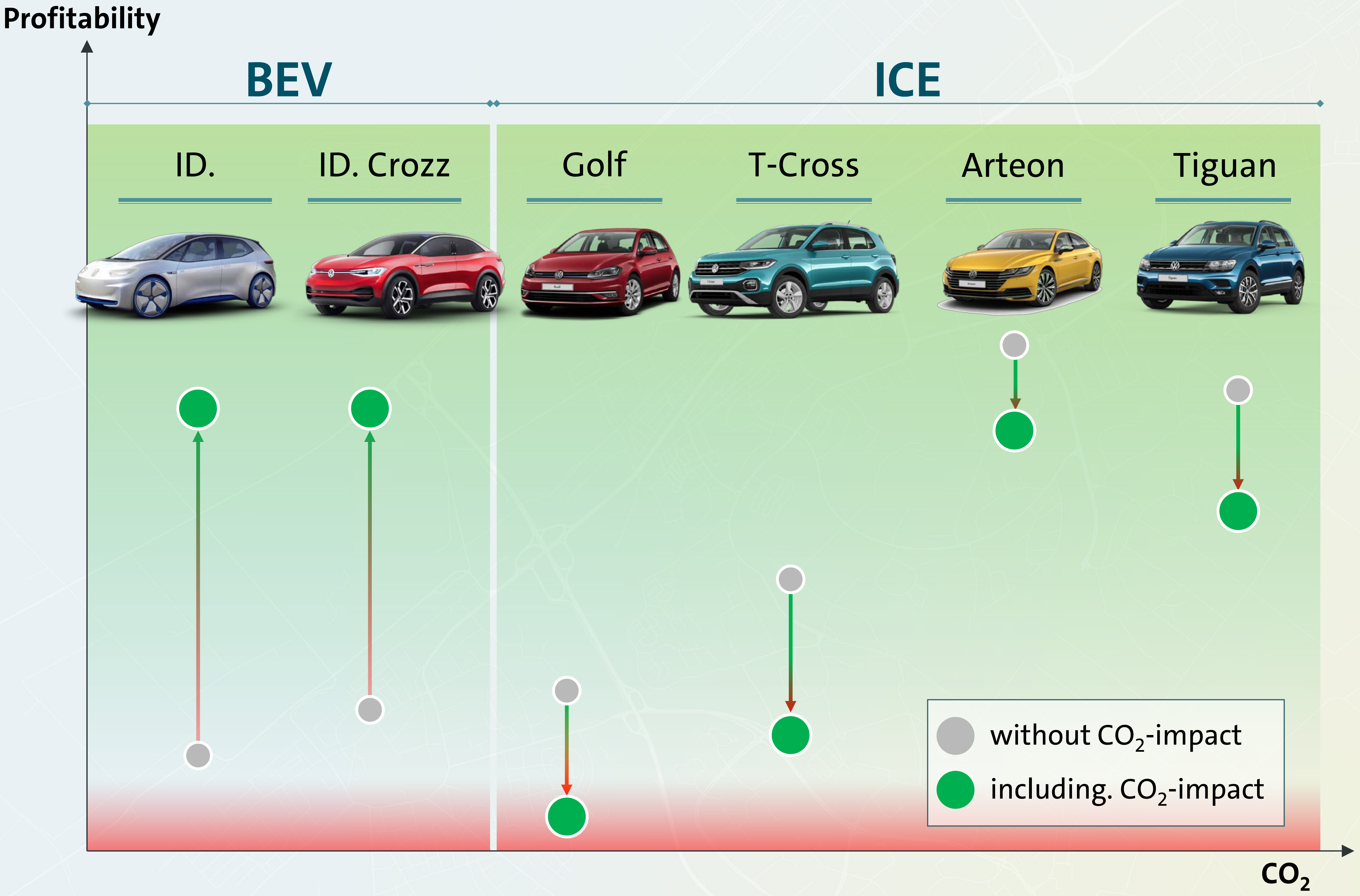
BEVS ARE FIRST CHOICE AS THE MOST COST EFFICIENT SOLUTION FOR CO_2 REDUCTION

MEASURES FOR CO_2 REDUCTION IN €/G CO_2



Example Volkswagen Brand: Ranking CO_2 efficiency indicators (average) for selected CO_2 measures

CO_2 FLEET TARGETS HAVE CHANGED PRODUCT PROFITABILITY



IMPACT ON PRODUCT DECISIONS:

- TRANSITION PERIOD: **ICES** STILL MORE PROFITABLE
- RISING COSTS OF CO2 COMPLIANCE NEGATIVELY IMPACT ICE PROFITABILITY
- **BEVS** NECESSARY FOR CO_2 COMPLIANCE
- INCREASING VOLUME OF **BEVS** DRIVES PROFITABILITY

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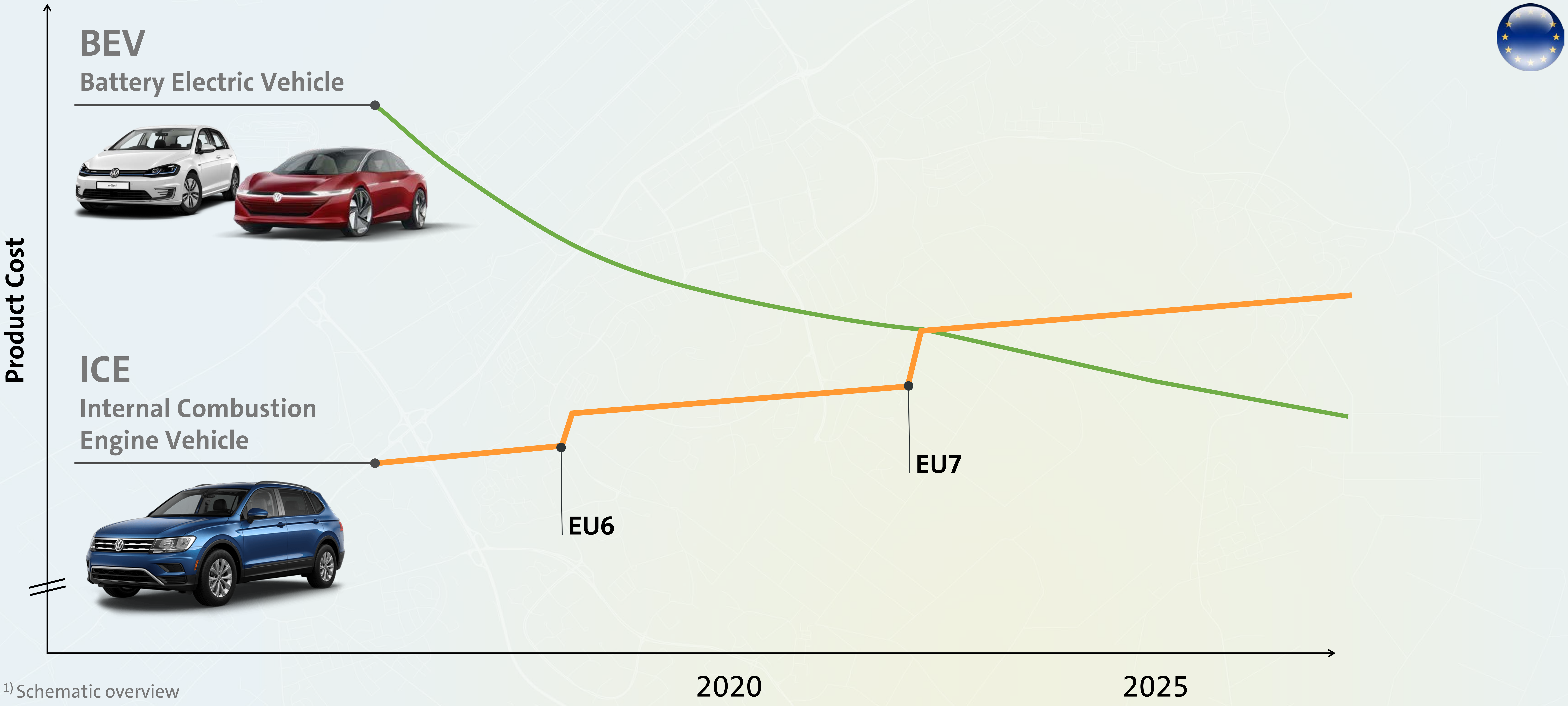
BEV AND ICE COSTS AND MARGINS ARE CONVERGING SOON[1)]



[1)] Schematic overview

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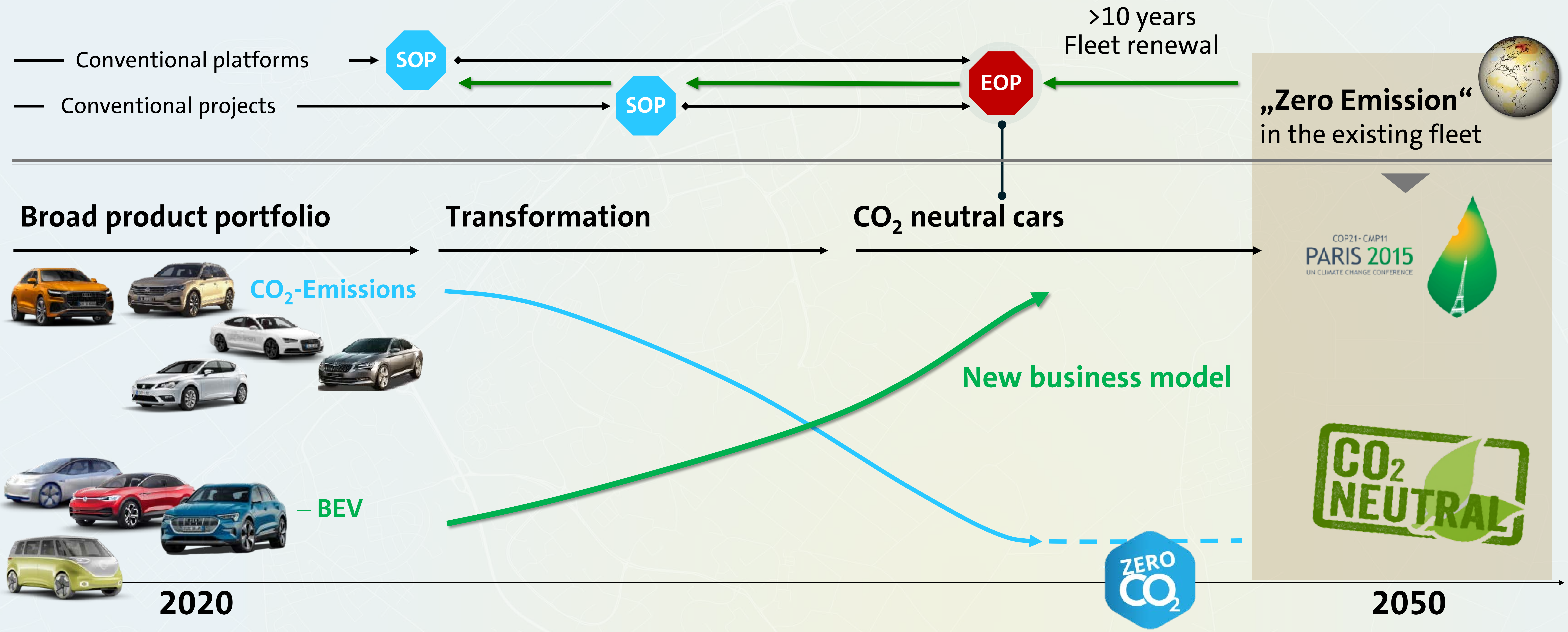
E-MOBILITY TRANSFORMATION IS REFLECTED IN OUR CORPORATE PLANNING

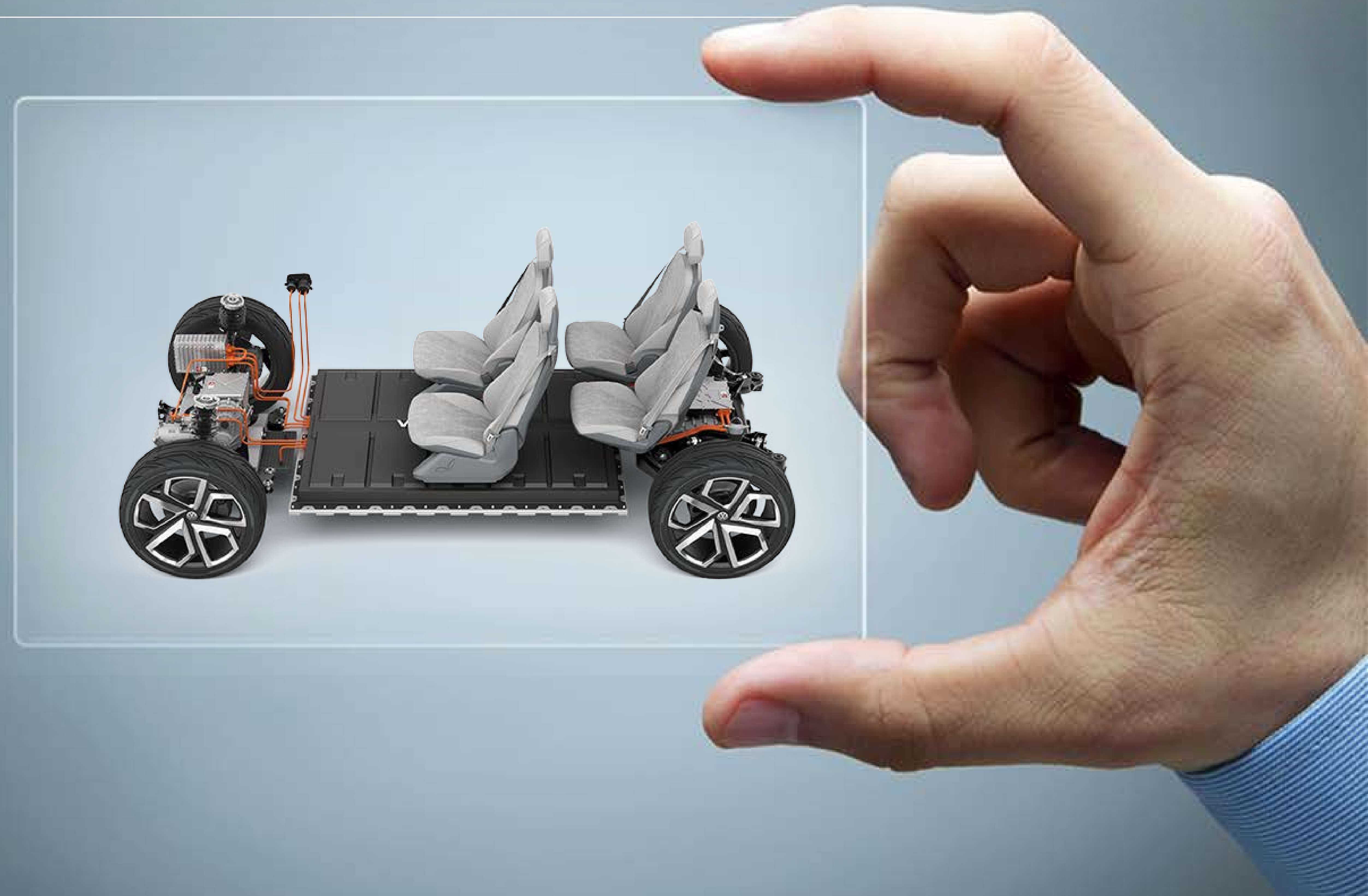
PARIS IMPLICATIONS AND TRANSFORMATION PATH



DEDICATED PLATFORMS (MEB/PPE) GUARANTEE SUPERIOR CUSTOMER EXPERIENCE, SCALE AND VERSATILITY

SCALABLE TECHNOLOGY

- Long wheelbase short overhangs
- Spacious interior for driver & passengers
- No center tunnel
- Various bodystyles
- Big wheels
- Rear-wheel & four-wheel drive
- Central computing unit
- Trunk volume ~ ICE
- New Design



OUR E-MOBILITY STRATEGY COMES TOP DOWN…

SUMMARY E-MOBILITY STRATEGY

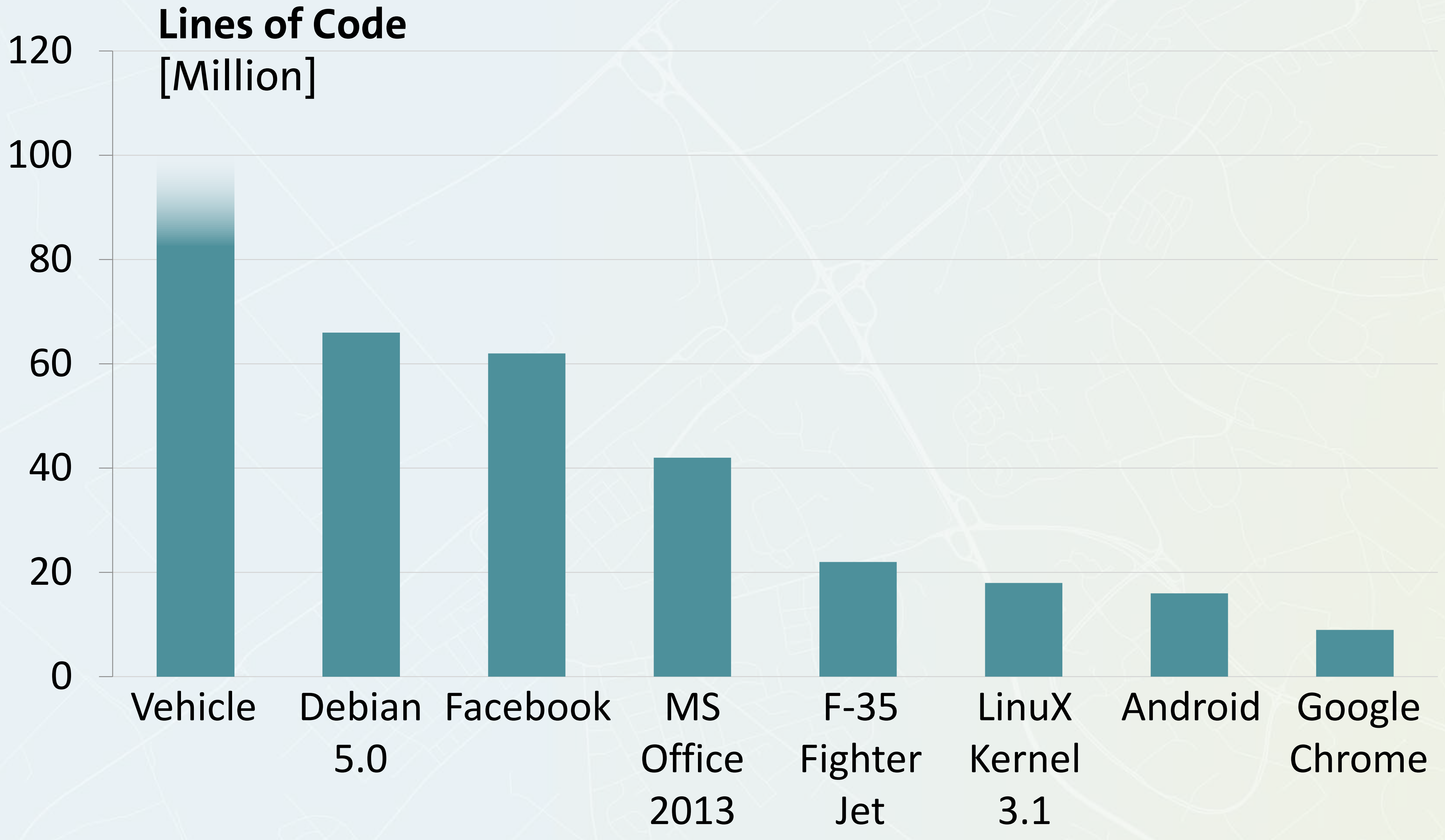
- Only way to **meet Paris climate target**
- Most **cost efficient** way to **meet fleet targets**
- **Dedicated platforms** put Volkswagen in pole position
- **Volume in China and Group** guarantees **scale effects**
- **Multi-brand plants** provide efficiencies
- **Top down strategy** (premium → volume)
- **Holistic customer focus:**
  dealers well prepared, infrastructure in progress, affordable
- **Battery supply** secured

Fully reflected in corporate planning

THE SOFTWARE CHANGE

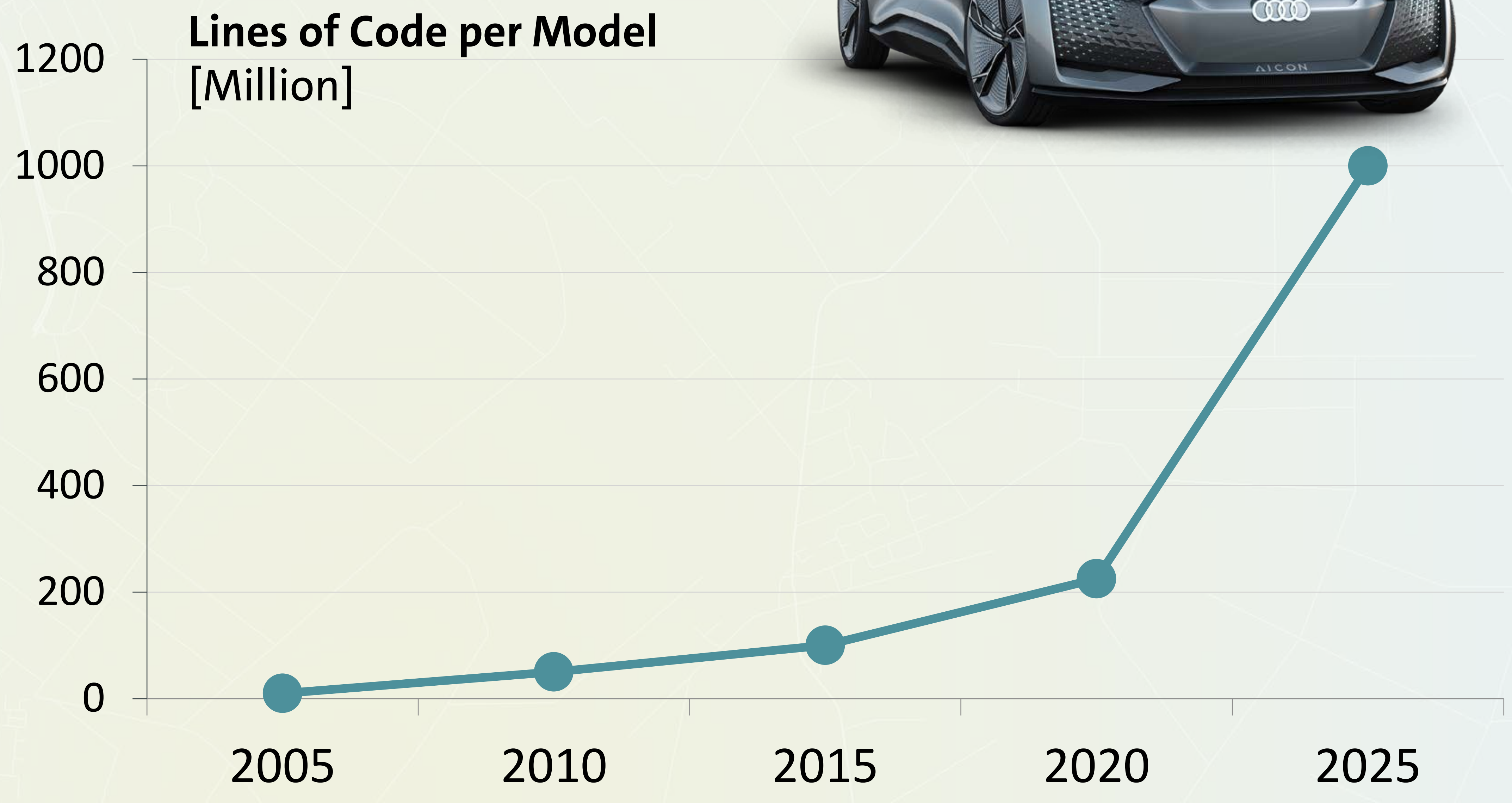
Today

- 100 million lines of code per vehicle
- Approximately $ 10 per line of code
- Example: Navi system 20 million lines of code



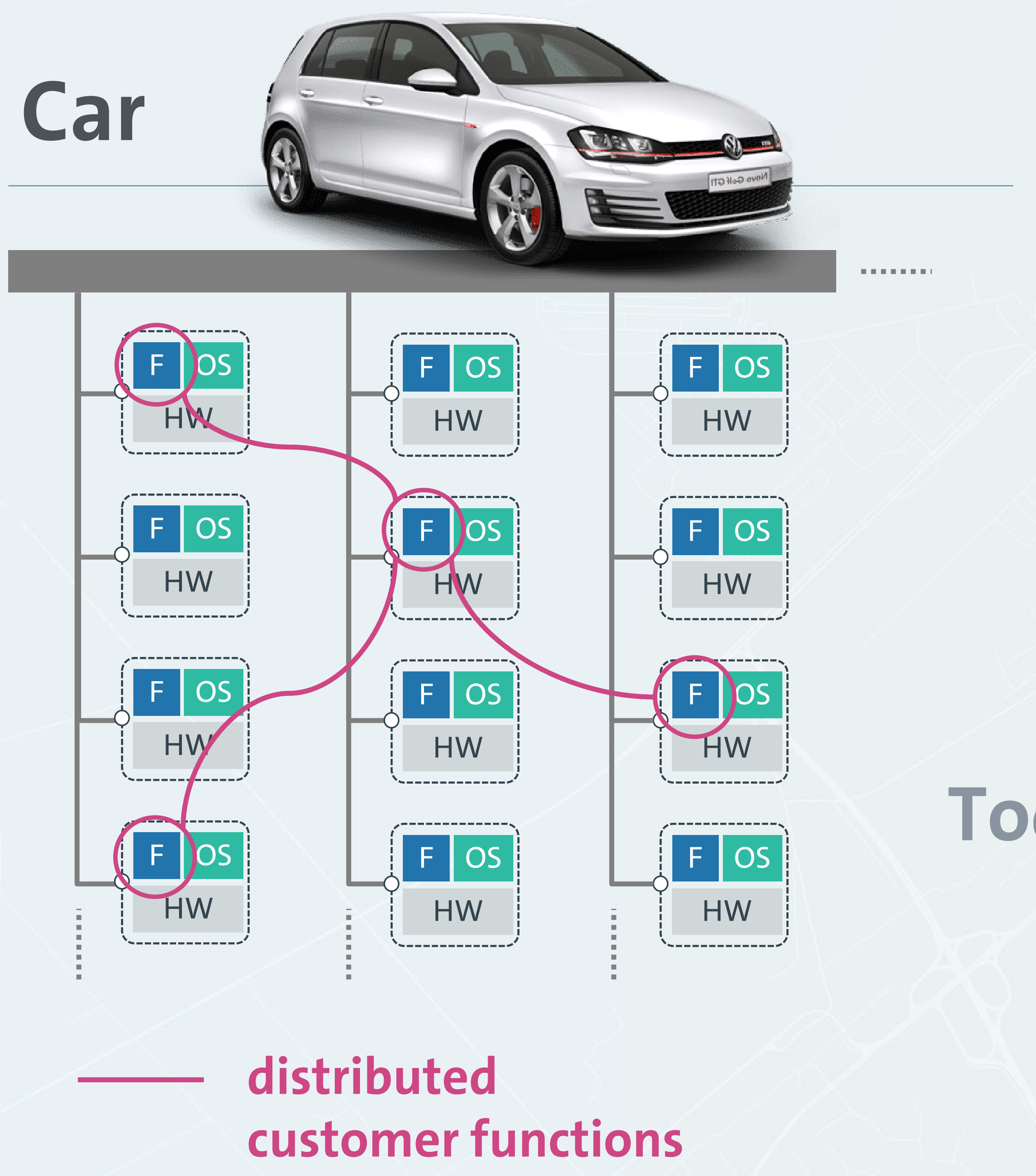
Tomorrow

- > 200 - 300 million lines of code are expected
- Level 5 autonomous driving will take up to 1 billion lines of code



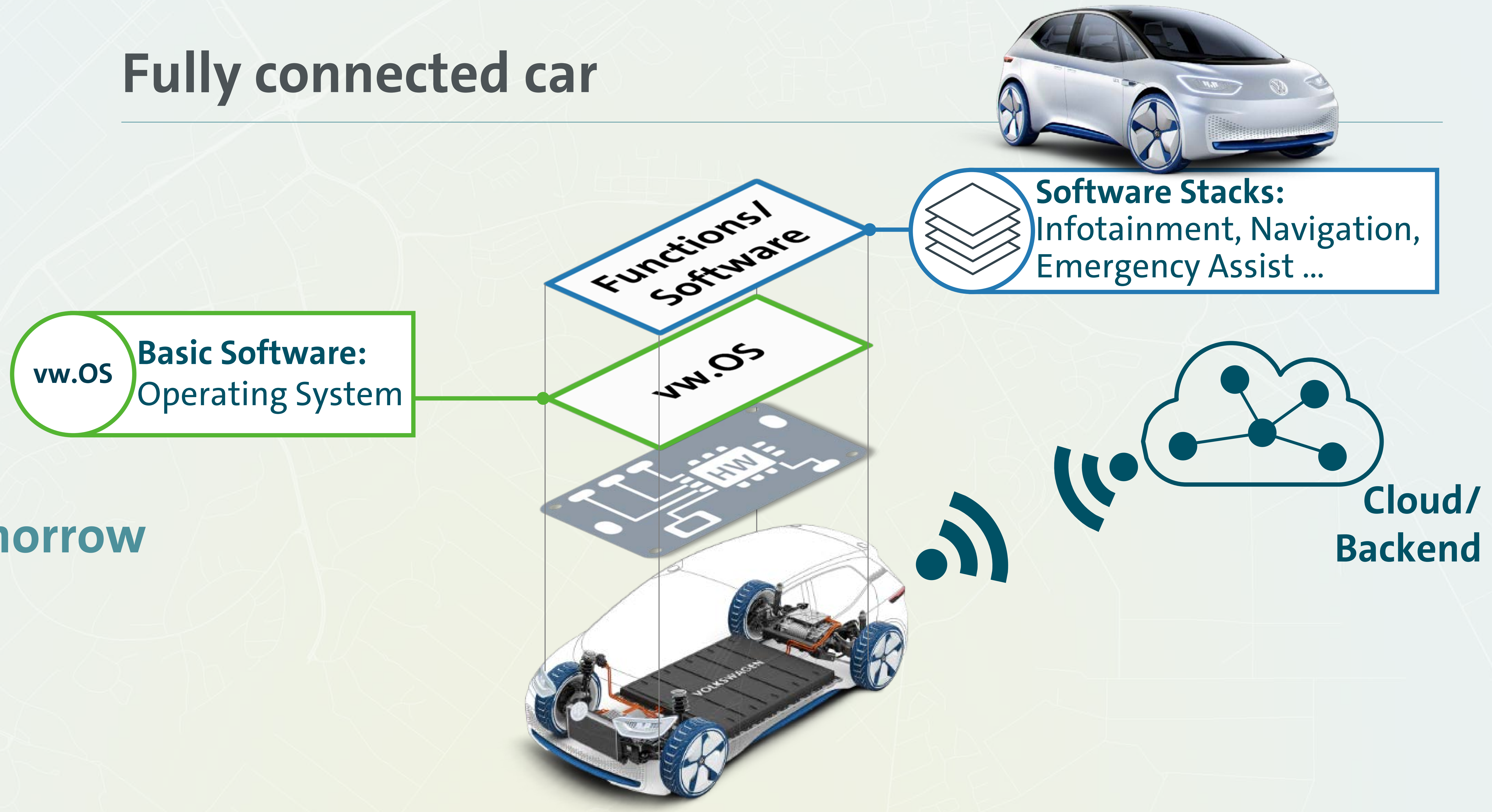
Quellen: https://spectrum.ieee.org/transportation/systems/this-car-runs-on-code | http://frost.com/prod/servlet//press-release.pag?docid=284456381 | https://www.visualcapitalist.com/millions-lines-of-code/

THE CAR BECOMES THE MOST COMPLEX INTERNET DEVICE



Today

Tomorrow



Control units: approx. **70**

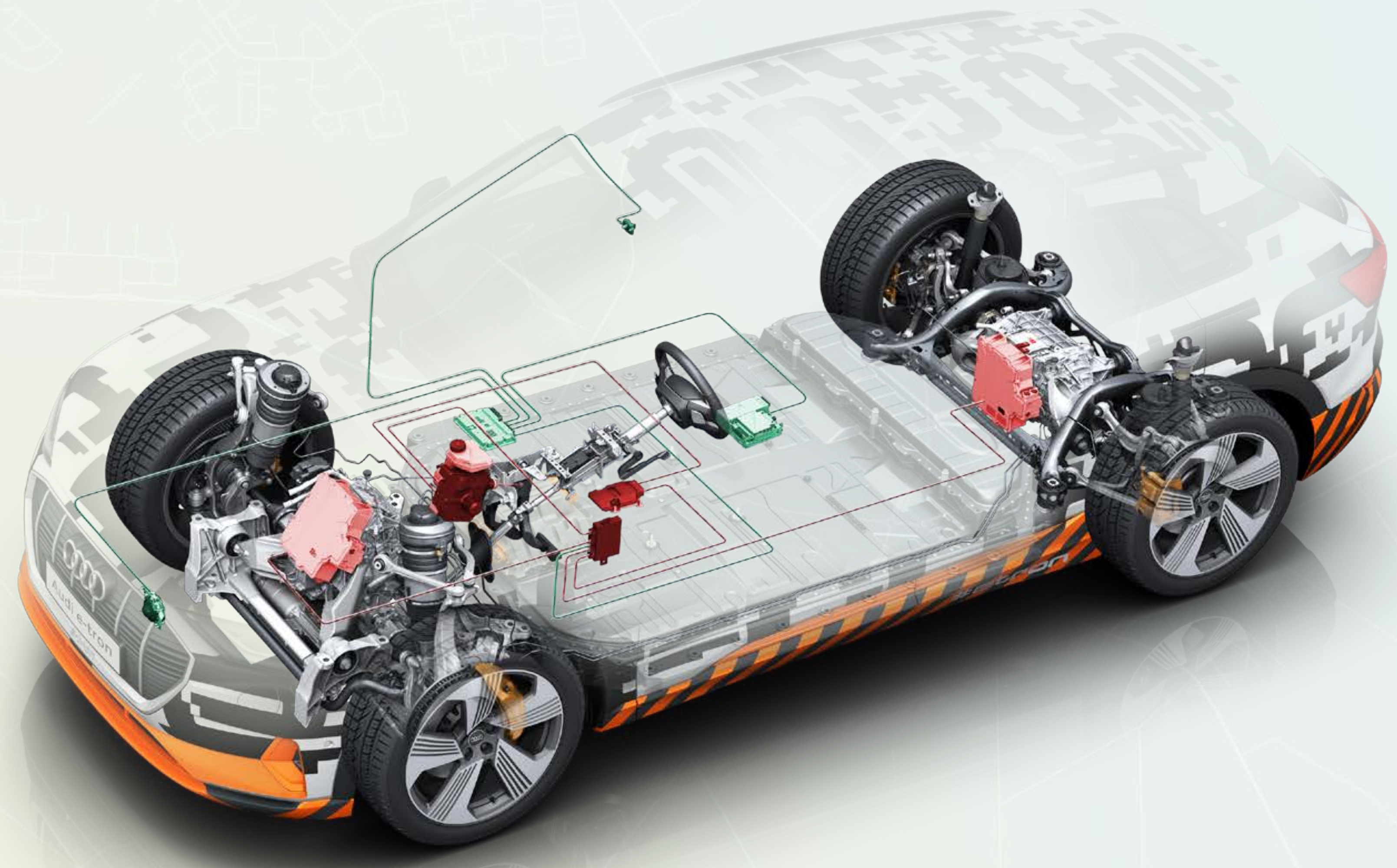
No own Software stacks

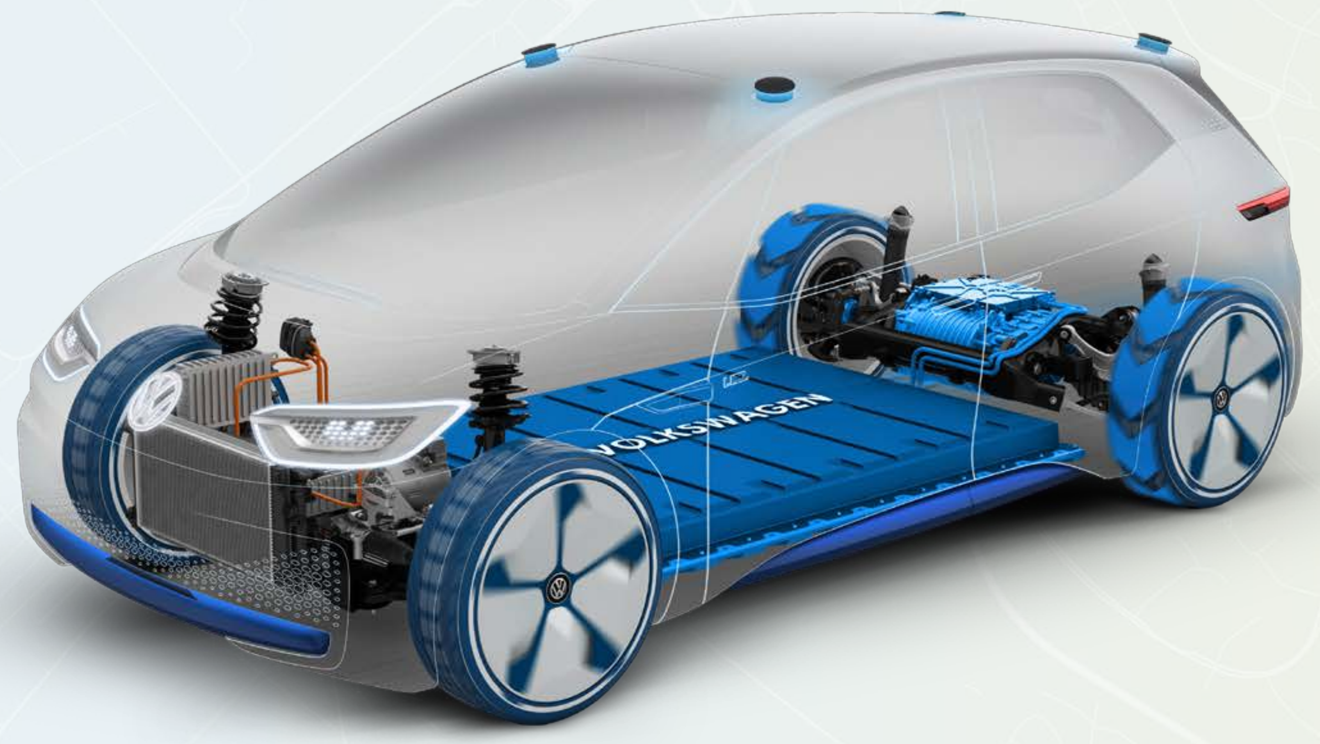
High Performance Computers **3-5** + **Further control units for safety relevant functions**

Development of Volkswagen's own Software stacks

FIRST STEPS TAKEN IN SOFTWARE TRANSFORMATION

- **E^3 architecture** for premium (PPE) and volume (MEB) under way
- **Separating** hardware and software **development**
- Ramp up **software competencies** started (Carmeq)
- **Partnerships** and acquisitions (Microsoft/WirelessCar/Diconium)
- **Board position** for **Software** development
- **Strategy:**
    - Volkswagen Group owns software stack
    - Deploys software continuously into the fleets / all car brands





INCREASED FOCUS ON VALUE CREATION

- First steps to **release shareholder value**: TRATON in preparation and further steps in portfolio optimization in consideration
- **Performance share plan introduced** introduced to Top Level Management (~380) and similar plan to be introduced to total Management (~6.800)
- **Efficiency and Performance programs, complexity reduction and synergies** in all brands
- Roll out of **Integrity-Program** well on the way
- **Leadership program** expanded

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KEY MESSAGES

1. Leading the industry in e-mobility

2. Cost effective transformation path

3. First in transforming into software OEM

4. Increased focus on value creation

5. Update on Strategy Together 2025+ in summer