



Citi Auto Field Trip 2021

May 20, 2021



Oliver Hoffmann

Member of the Board of Management for Technical Development at AUDI AG

Audi A6 e-tron concept: The vehicle shown here is a concept car that is not available as a production model.


















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With its broad model range, Audi covers almost all customer wishes.

 A1	 A3	 A4	 A5	 A6	 A7
 A8	 TT	 R8	 e-tron	 e-tron GT	 Q4 e-tron
 Q2	 Q3	 Q5	 Q7	 Q8	



BEV



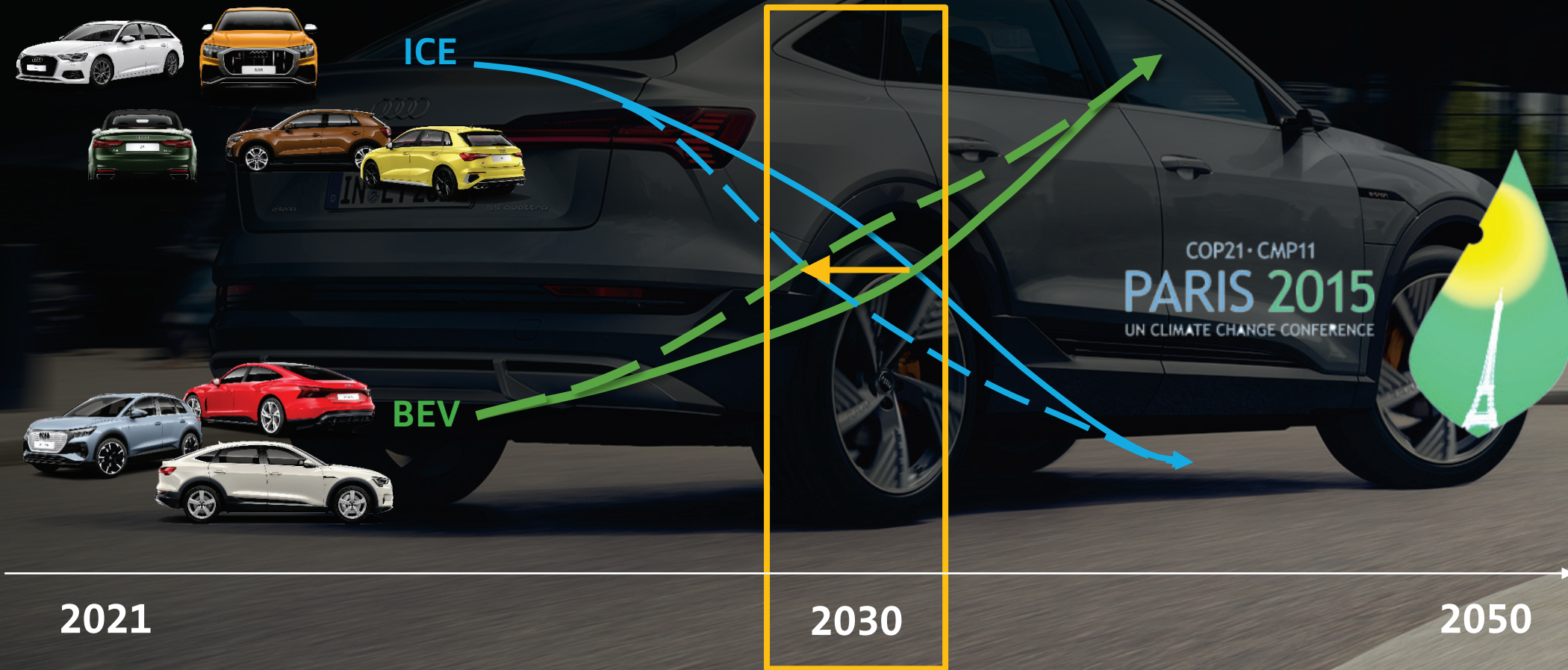
PHEV available

From ICE to BEV: Transformation of portfolio underway.

Broad Product Portfolio

Transformation

CO₂-neutral vehicles



Audi e-tron Sportback: combined electric power consumption* in kWh/100 km: 24 – 20.9 (NEDC); combined CO₂ emissions* in g/km: 0 (NEDC)
Information on fuel/power consumption and CO₂ emissions in ranges depending on the chosen equipment level of the car.

Audi's E-Roadmap is well on track.

1

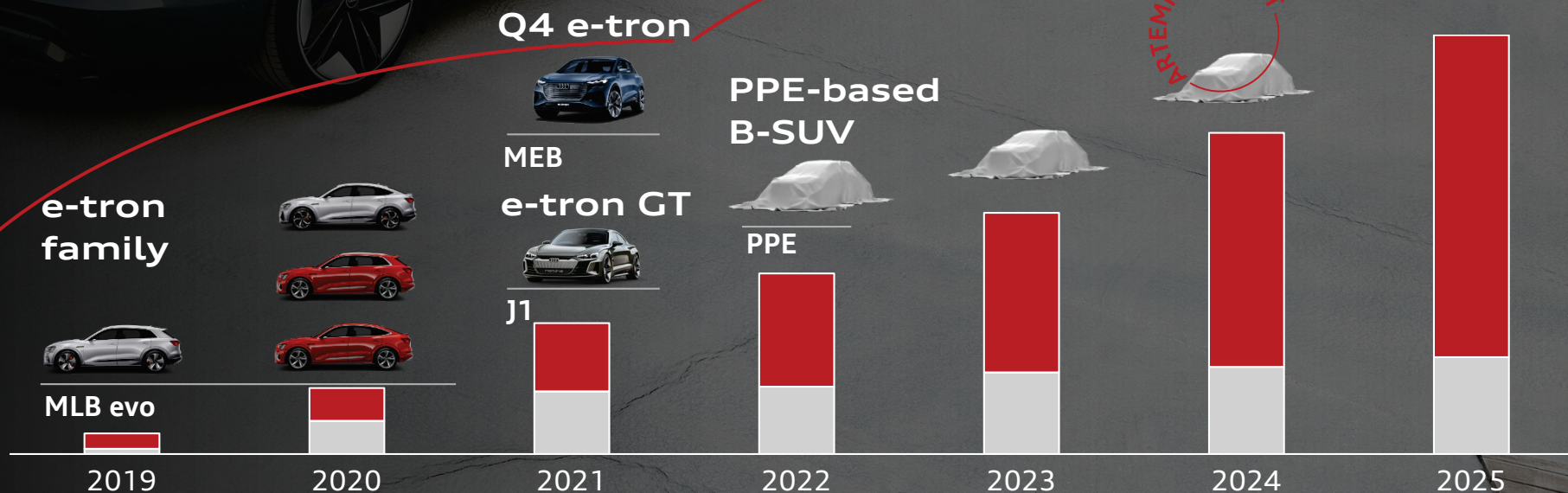
Start of the transformation to electric mobility

2

Volume ramp-up and internationalization

3

Variety of models and broad segment coverage



NEV share of worldwide deliveries
~1/3

■ BEV
■ PHEV

Audi RS e-tron GT: combined electric power consumption* in kWh/100 km: 20.2 – 19.3 (NEDC); combined CO₂ emissions* in g/km: 0 (NEDC); Information on fuel/power consumption and CO₂ emissions in ranges depending on the chosen equipment level of the car.

We are the only premium OEM to benefit from synergies to such an degree.

Hardware



ICE-platforms

MQB



MLB



BEV-platforms

J1



MEB

~19m vehicles by 2030¹⁾



PPE

~7m vehicles by 2030^{1) 2)}



Software



CARIAD

UNIFIED TECHNOLOGY SOFTWARE PLATFORM FOR ALL VEHICLE PLATFORMS IN THE GROUP

¹⁾ Across all brands of the VW Group; ²⁾ Includes small number of fully electric vehicles based on other platforms.

The masterpiece: The Audi e-tron GT quattro & Audi RS e-tron GT.

J1


Audi e-tron GT quattro & Audi RS e-tron GT



Strategic rationale

 brand shaper

celebration of Audi design 

 emotional charging of the e-tron brand (analogue to R8, TT)

scaling of Porsche's J1 platform 

Product highlights (▧ = RS e-tron GT)

 350 kW (476 PS)	 440 kW (598 PS)
 Top speed 245 km/h	 250 km/h
 4.1s 0 → 100 km/h	 3.3s
 up to 488 km (WLTP)	 up to 472 km (WLTP)
 Fast charging up to 270 kW: 5 Minutes for ~100 km	

Audi RS e-tron GT: combined electric power consumption* in kWh/100 km: 20.2 – 19.3 (NEDC); combined CO₂ emissions* in g/km: 0 (NEDC); Information on fuel/power consumption and CO₂ emissions in ranges depending on the chosen equipment level of the car.

Q4 e-tron: Attractive entry point into Audi's premium e-mobility.

MEB

Audi Q4 e-tron and Audi Q4 Sportback e-tron



Strategic rationale


 **attractive price** for an **attractive car**

Democratization of e-mobility 


 **cost depression** –
thanks to higher volumes

ensuring **long-term CO2-compliance** 


Product highlights

 **up to 220 kW** (299 PS)

Top speed **180 km/h** 

 **6.2s** 0 → 100 km/h (Q4 50 e-tron quattro)

up to 520 km (WLTP) 

 HP charging:
10 Minutes for **~130 km** (Q4 40 e-tron)

Audi Q4 Sportback 50 e-tron quattro: combined electric power consumption* in kWh/100 km: 17.9 – 16.4 (NEDC); combined CO₂ emissions* in g/km: 0 (NEDC)
Information on fuel/power consumption and CO₂ emissions in ranges depending on the chosen equipment level of the car.

Audi is working with Porsche to develop the PPE for large electric cars.



Audi A6 e-tron concept




Strategic rationale


 Outlook on the **PPE**

high grounded clearance and **dynamic style** 

 unveiled at the **Auto Shanghai 2021** show


will cover customer requests in the **full-size and luxury class** 

Concept & PPE highlights

 **<4s** → 100 km/h

cW: **0.22** 

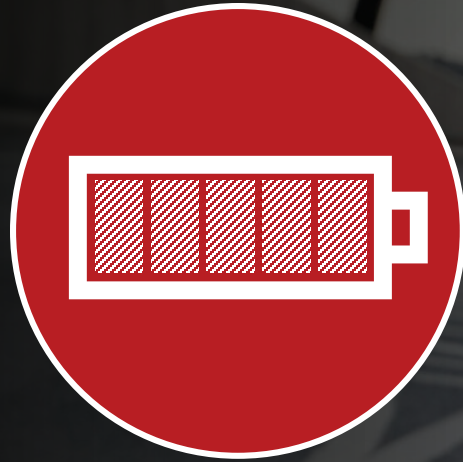
 fast charging with up to 270 kW:
10 Minutes for >300 km

>700 km 

 first PPE C-segment SUV to be unveiled in **2022**

Audi A6 e-tron concept: The vehicle shown here is a concept car that is not available as a production model.

Electric mobility only works as a holistic system.






Battery Cell & System

- > By 2030, unified battery cell will cover 80% of the use cases in the VW Group
- > Rollout starts with Audi's Artemis project
- > Up to **50%** cost decrease:
 - Cell design **-15%**
 - Production process **-10%**
 - Cathode/anode material **-20%**
 - Battery system concept **-5%**



Charging & Energy

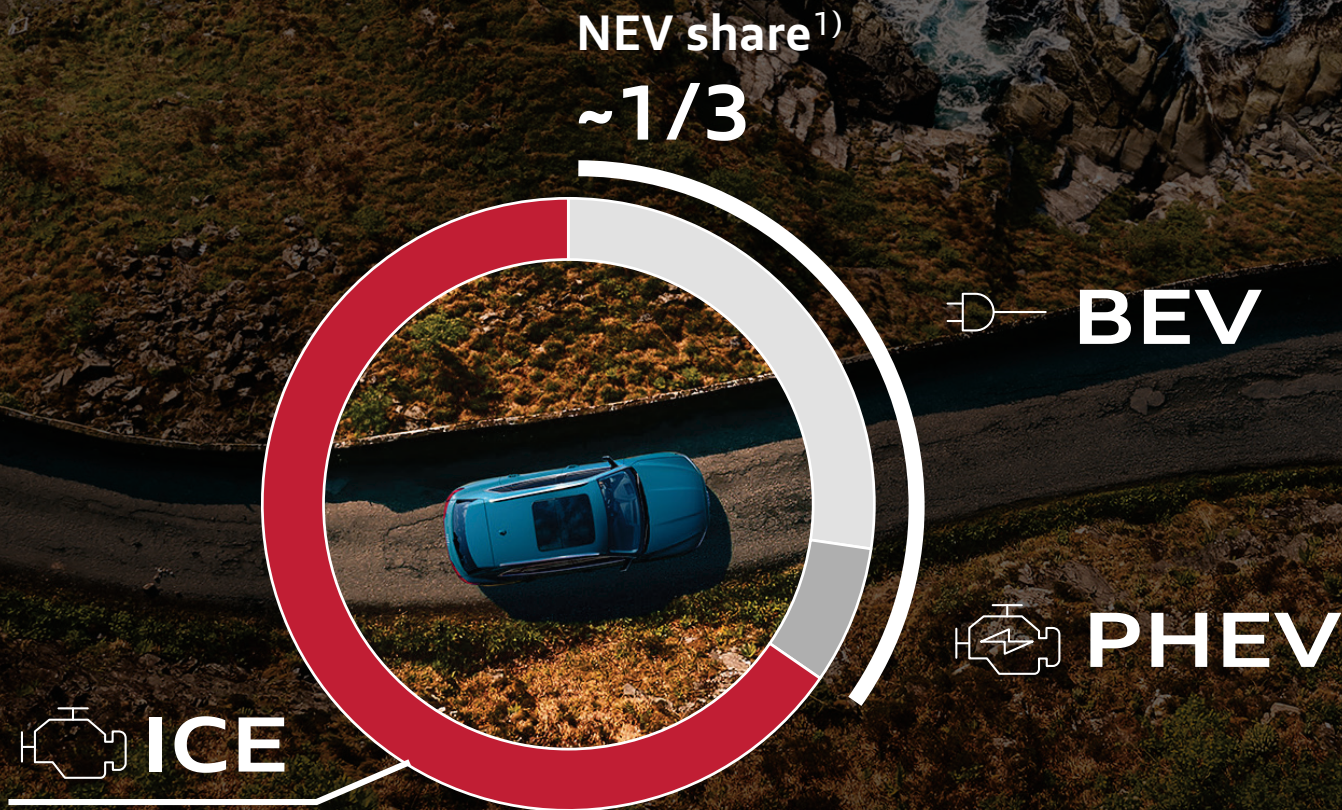
- > Vision: Charging has to be as easy as refueling
- > HPC infrastructure is crucial for a fast EV adoption
- > **Global HPC-Boost-Plan** within the VW Group and based on strong partnerships:
 -  ~18,000 HPC points by 2025
 -  ~3,500 HPC points by 2021
 -  ~17,000 HPC points by 2025

Audi charging hub: Huge potential for premium charging experience.



Balanced portfolio is key – “best in class” for both BEV and ICE.

2025
mix by
powertrain¹⁾



¹⁾ target, as share of production

We are the only premium OEM to benefit from synergies to such an degree.

Hardware



ICE-platforms

MQB



MLB



BEV-platforms

J1



MEB

~19m
vehicles
by 2030¹⁾



PPE

~7m
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Software



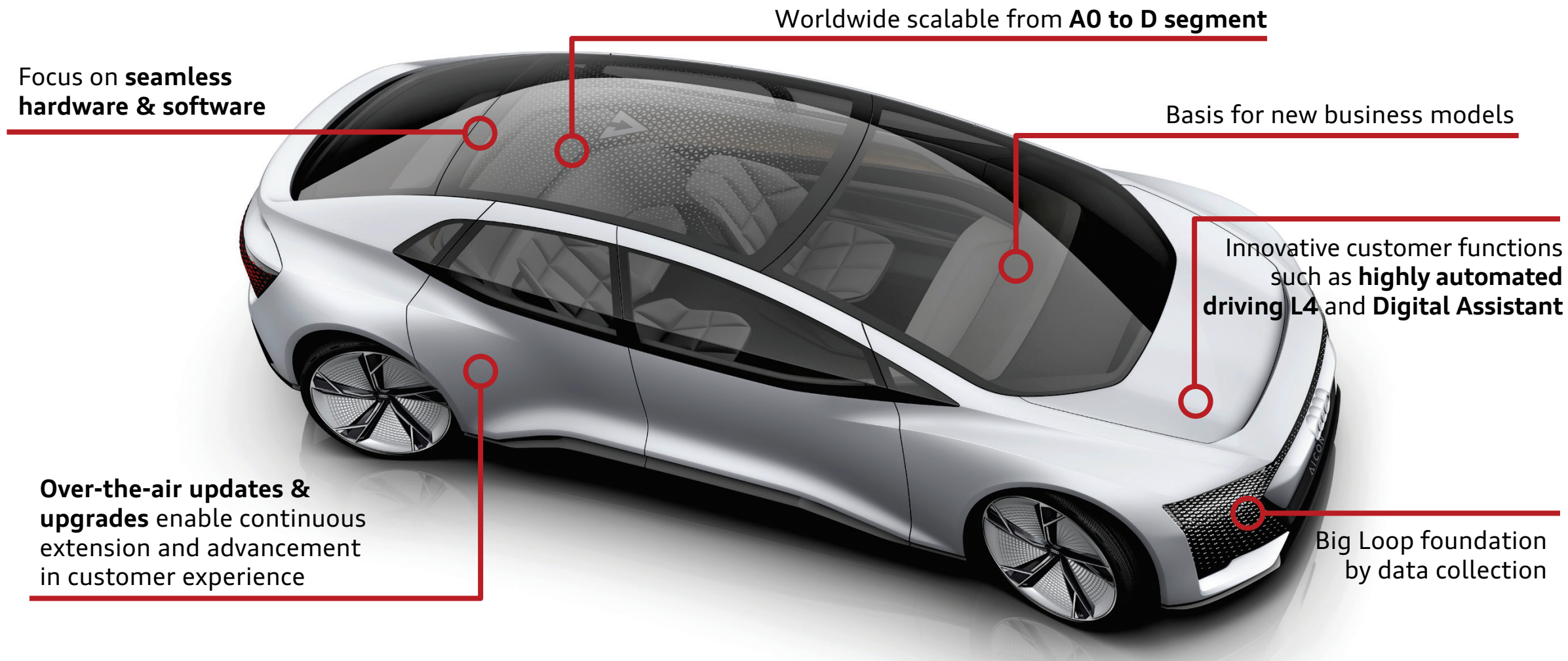
CARIAD



**UNIFIED
TECHNOLOGY
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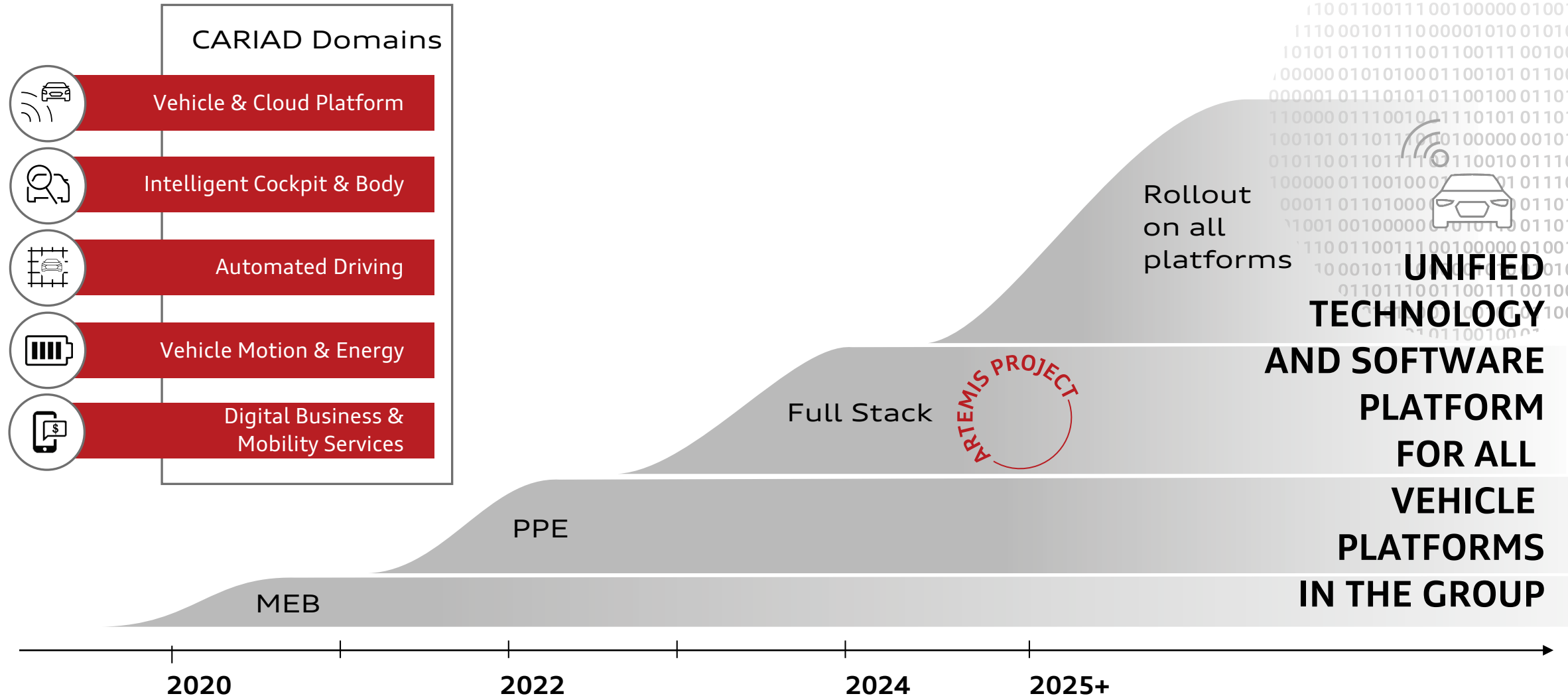
E³ 2.0: Key technology on the way to a software enabled car company.



C A R I A D **E³ 2.0 Architecture**

 <p>Software (incl. VW.OS)</p>	 <p>Hardware</p>	 <p>Cloud</p>
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CARIAD: Bundling software competencies and synergies within the VW Group.



Evolutionary progress: Parallel development of assisted functions and AD.



Depending on legal framework

Freeway pilot



Automated valet parking



Highly Automated L3/L4

Assisted L0-L2

Existing driver assist systems



The driving experience is improved dramatically by data-driven development



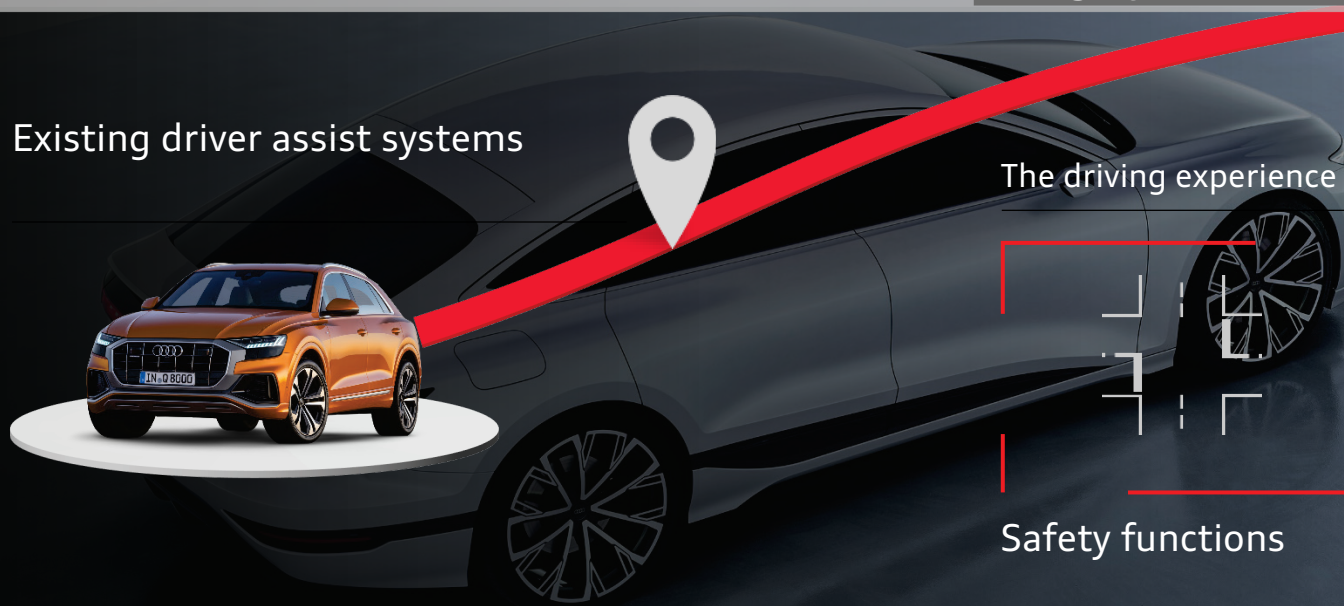
Safety functions



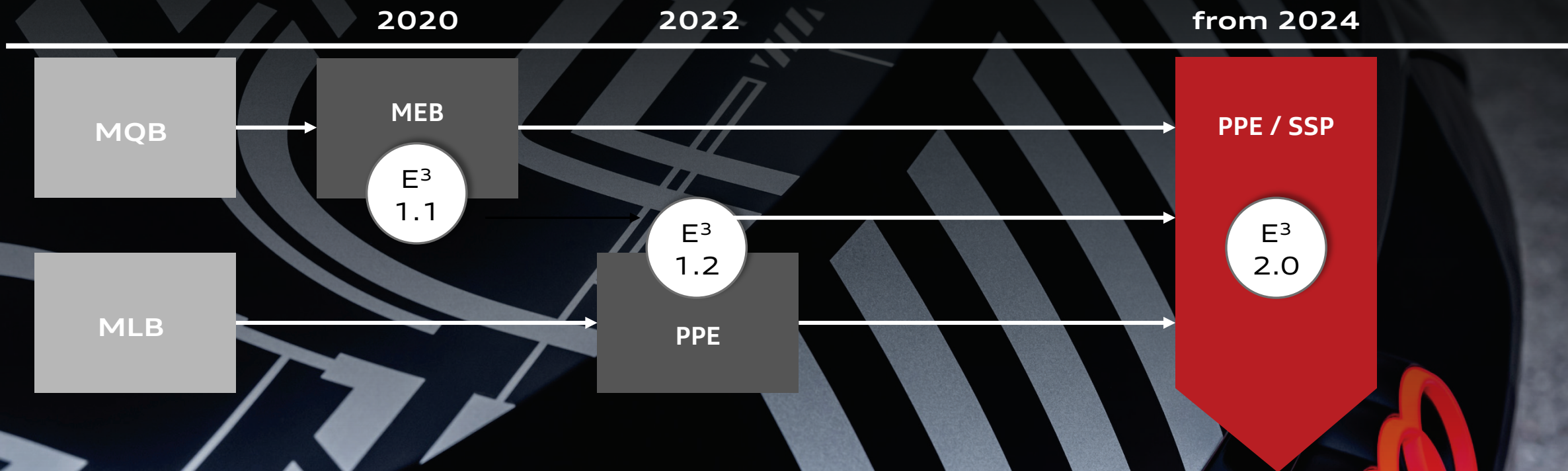
Driving functions



Parking functions



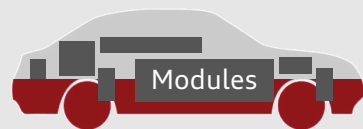
Next step: HW & SW platforms are going to be synchronized within the VW Group.



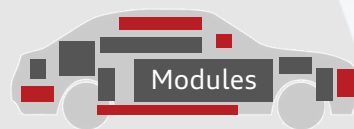
Paradigm shift with SSP: Systems in focus



Traditional Platform



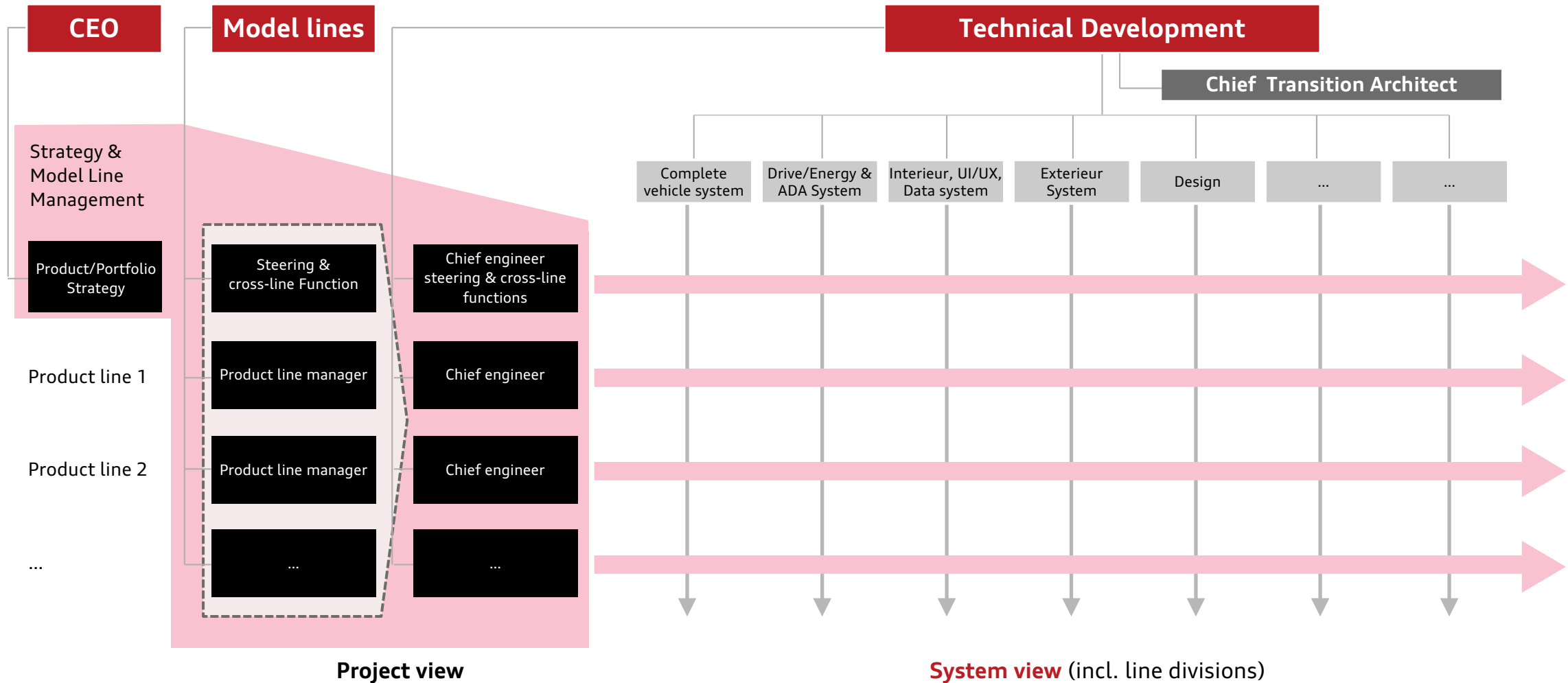
Modular Toolkit
(e.g. MQB, MLB, MEB, PPE)



Scalable System Platform (SSP)

- + Backbone-Approach
- + High Scalability
- + High potential for 3rd party commercialization

Restructuring of the technical development area along system engineering.



»» Overarching principle to strengthen value streams: ,projects lead, lines execute.’

Audi focuses investments and R&D activities on future products and technologies.

Total investments
€35bn

thereof

Future topics

€17bn

2021-2025

&

↑ 6-7%

strategic target corridor

R&D ratio

(previously 5-6%)



Electrification



Hybridization



Digitalization

(CARIAD budget not included)



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Vorsprung durch Technik





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* The specified fuel consumption and emission data have been determined according to the measurement procedures prescribed by law. Since 1st September 2017, certain new vehicles are already being type-approved according to the Worldwide Harmonized Light Vehicles Test Procedure (WLTP), a more realistic test procedure for measuring fuel consumption and CO₂ emissions. Starting on September 1st 2018, the New European Driving Cycle (NEDC) will be replaced by the WLTP in stages. Owing to the more realistic test conditions, the fuel consumption and CO₂ emissions measured according to the WLTP will, in many cases, be higher than those measured according to the NEDC. Therefore, the usage of CO₂ emission values measured according to WLTP for vehicle taxation from 1st September 2018 on can cause changes in this regards as well. For further information on the differences between the WLTP and NEDC, please visit www.audi.de/wltp.

We are currently still required by law to state the NEDC figures. In the case of new vehicles which have been type-approved according to the WLTP, the NEDC figures are derived from the WLTP data. It is possible to specify the WLTP figures voluntarily in addition until such time as this is required by law. In cases where the NEDC figures are specified as value ranges, these do not refer to a particular individual vehicle and do not constitute part of the sales offering.

They are intended exclusively as a means of comparison between different vehicle types. Additional equipment and accessories (e.g. add-on parts, different tyre formats, etc.) may change the relevant vehicle parameters, such as weight, rolling resistance and aerodynamics, and, in conjunction with weather and traffic conditions and individual driving style, may affect fuel consumption, electrical power consumption, CO₂ emissions and the performance figures for the vehicle.

For further information on the official fuel consumption and official specific CO₂ emissions of new cars, please refer to the "Guide to the fuel and energy consumption and CO₂ emissions of new cars", which is available free of charge at all points of sale and from Deutsche Automobil Treuhand GmbH, Hellmuth-Hirth-Str. 1, D-73760 Ostfildern or under www.dat.de.

* Die angegebenen Verbrauchs- und Emissionswerte wurden nach den gesetzlich vorgeschriebenen Messverfahren ermittelt. Seit dem 1. September 2017 werden bestimmte Neuwagen bereits nach dem weltweit harmonisierten Prüfverfahren für Personenwagen und leichte Nutzfahrzeuge (Worldwide Harmonized Light Vehicles Test Procedure, WLTP), einem realistischeren Prüfverfahren zur Messung des Kraftstoffverbrauchs und der CO₂-Emissionen, typgenehmigt. Ab dem 1. September 2018 wird der WLTP schrittweise den neuen europäischen Fahrzyklus (NEFZ) ersetzen. Wegen der realistischeren Prüfbedingungen sind die nach dem WLTP gemessenen Kraftstoffverbrauchs- und CO₂-Emissionswerte in vielen Fällen höher als die nach dem NEFZ gemessenen. Dadurch können sich ab 1. September 2018 bei der Fahrzeugbesteuerung entsprechende Änderungen ergeben. Weitere Informationen zu den Unterschieden zwischen WLTP und NEFZ finden Sie unter www.audi.de/wltp.

Aktuell sind noch die NEFZ-Werte verpflichtend zu kommunizieren. Soweit es sich um Neuwagen handelt, die nach WLTP typgenehmigt sind, werden die NEFZ-Werte von den WLTP-Werten abgeleitet. Die zusätzliche Angabe der WLTP-Werte kann bis zu deren verpflichtender Verwendung freiwillig erfolgen. Soweit die NEFZ-Werte als Spannen angegeben werden, beziehen sie sich nicht auf ein einzelnes, individuelles Fahrzeug und sind nicht Bestandteil des Angebotes. Sie dienen allein Vergleichszwecken zwischen den verschiedenen Fahrzeugtypen. Zusatzausstattungen und Zubehör (Anbauteile, Reifenformat usw.) können relevante Fahrzeugparameter, wie z. B. Gewicht, Rollwiderstand und Aerodynamik verändern und neben Witterungs- und Verkehrsbedingungen sowie dem individuellen Fahrverhalten den Kraftstoffverbrauch, den Stromverbrauch, die CO₂-Emissionen und die Fahrleistungswerte eines Fahrzeugs beeinflussen. Weitere Informationen zum offiziellen Kraftstoffverbrauch und den offiziellen spezifischen CO₂-Emissionen neuer Personenkraftwagen können dem „Leitfaden über den Kraftstoffverbrauch, die CO₂-Emissionen und den Stromverbrauch neuer Personenkraftwagen“ entnommen werden, der an allen Verkaufsstellen und bei der DAT Deutsche Automobil Treuhand GmbH, Hellmuth-Hirth-Str. 1, D-73760 Ostfildern oder unter www.dat.de unentgeltlich erhältlich ist.