

A white Volkswagen Carizon car is the central focus, positioned in a factory or showroom. It is surrounded by other similar cars on an assembly line. The car has "CARIZON" written on its side and a green license plate. The background features a large "CARIZON" logo on the wall and colorful geometric shapes.

CARIZON

CARIZON

Utilizing AI to make driving safer and more enjoyable

Disclaimer

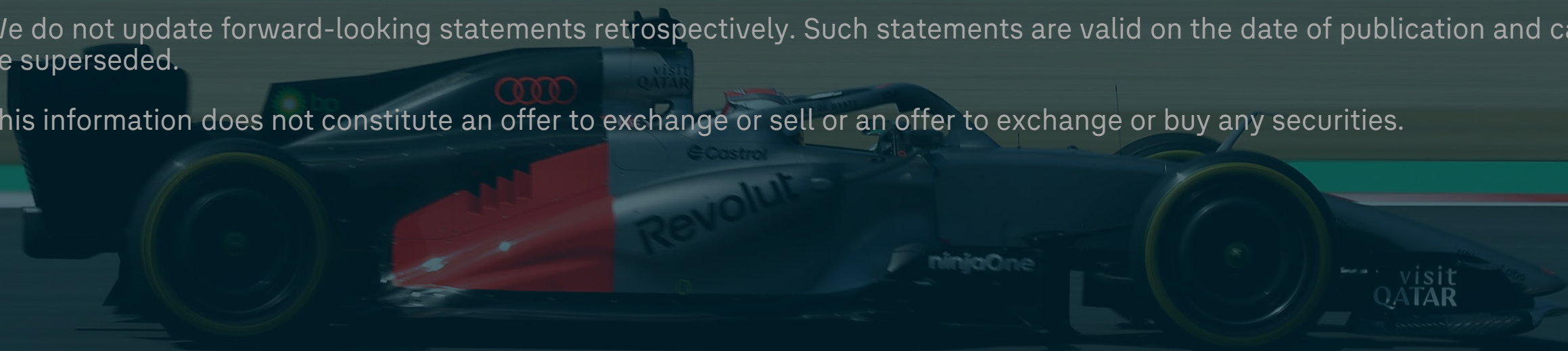
The following presentations as well as remarks/comments and explanations in this context contain forward-looking statements on the business development of the Volkswagen Group. These statements are based on assumptions relating to the development of the economic, political and legal environment in individual countries, economic regions and markets, and in particular for the automotive industry, which we have made on the basis of the information available to us and which we consider to be realistic at the time of going to press. The estimates given entail a degree of risk, and actual developments may differ from those forecast.

All figures are rounded, so minor discrepancies may arise from addition of these amounts.

Any changes in significant parameters relating to our key sales markets, or any significant shifts in exchange rates, energy and other commodities or the supply with parts relevant to the Volkswagen Group will have a corresponding effect on the development of our business. In addition, there may also be departures from our expected business development if the assessments of the factors influencing sustainable value enhancement and of risks and opportunities presented develop in a way other than we are currently expecting, or if additional risks and opportunities or other factors emerge that affect the development of our business.

We do not update forward-looking statements retrospectively. Such statements are valid on the date of publication and can be superseded.

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Marcus Hafkemeyer
韩鸿铭

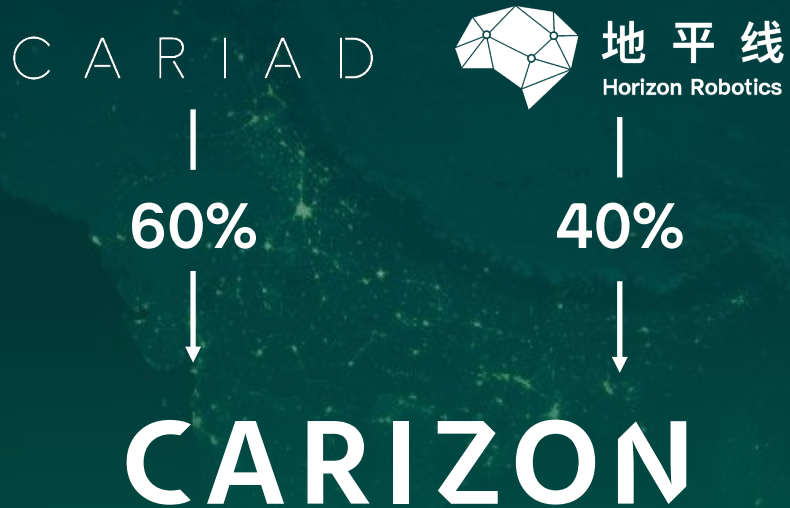
CEO of CARIZON
酷睿程CEO

- 1 Progress made**
- 2 Market Update
- 3 Delivery Roadmap
- 4 Technology Push

Introducing CARIZON

Our vision: Utilize AI to make driving safer and more enjoyable

Joint venture structure

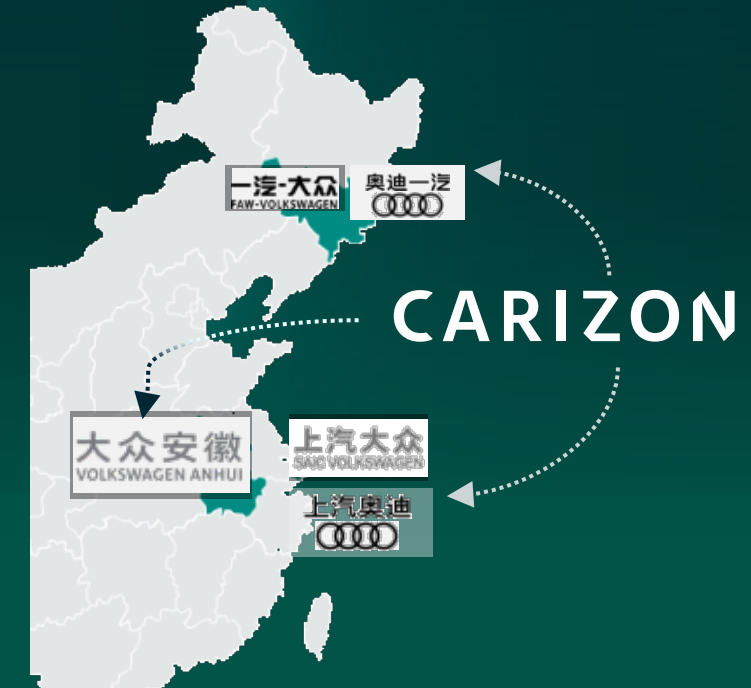


Strong team

- >90% R&D talents
- 60% from local tech companies
- 70% with >5 years of experience
- >70% with Masters/PhD

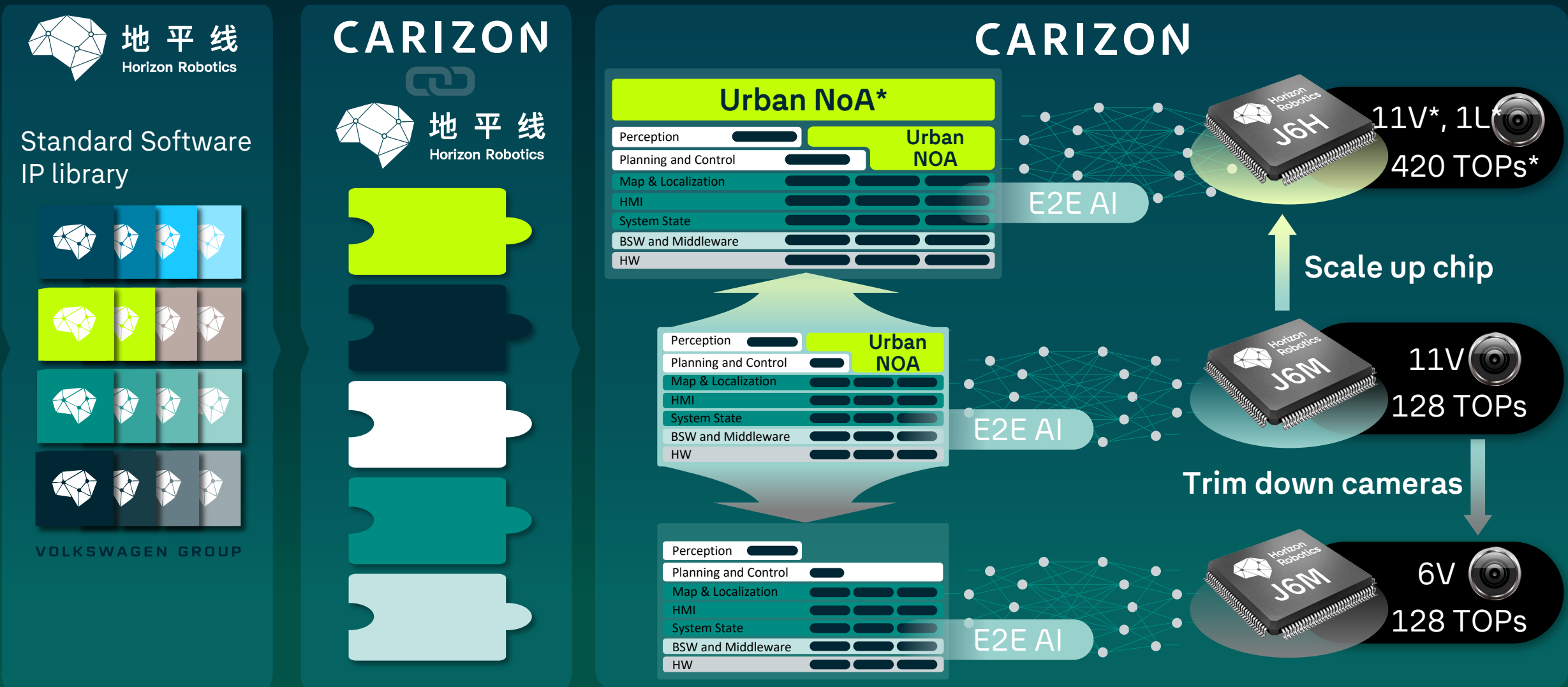
Our customers

ADAS supplier for Volkswagen Group in China of **differentiated products** covering various brands



Holistic cooperation: From SW IP to series solutions

CARIZON encompasses full value chain of development from SOP delivery until EOP



NoA: Navigating on Autopilot, V: Videocamera, L: LiDAR, TOPs = Tera operations per second

Holistically driving next-gen ICV's ADAS development

Exceptional SW-HW integration paired with in-house ECU design capabilities

CARIZON

Volkswagen Group China

Software and Hardware Integration

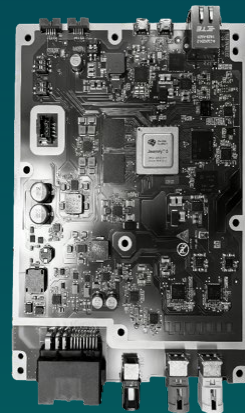
CARIZON



Perception	<input type="checkbox"/>	Urban NOA
Planning and Control	<input type="checkbox"/>	
Map & Localization	<input type="checkbox"/>	
HMI	<input type="checkbox"/>	
System State	<input type="checkbox"/>	
BSW/Middleware	<input type="checkbox"/>	
HW	<input type="checkbox"/>	



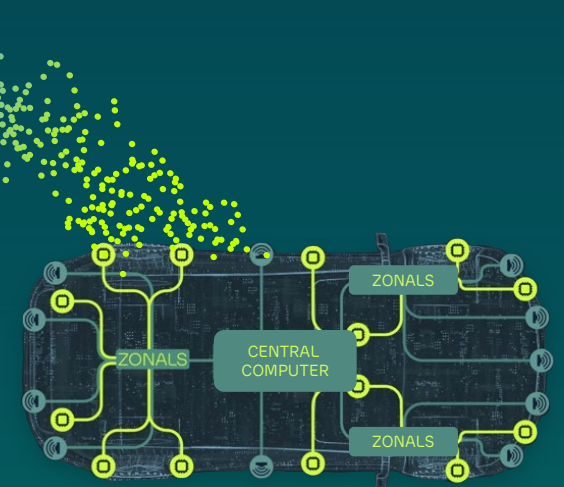
Printed Circuit Board Design



Electronic Control Unit Design



Electric Architecture Design



Building software stack with **hardware/software integration** capabilities

PCB and ECU design competence ensuring performance and cost control

Inhouse development center: Fast integration in Group's **China Electric Architecture**

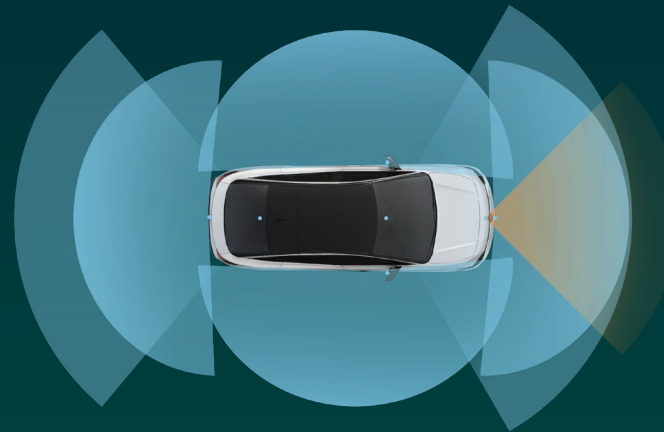
2025: CARIZON strategy implementation well on track

First inhouse-developed and AI-powered ADAS delivered to Volkswagen Group in China

Milestones in 2025

- 1 **Delivery of L2+**
- 2 Achieved China speed:
18 months development
time
- 3 AI-based training platform
GAIA: 2 terabyte and
over 100,000 test kilometers
trained daily
- 4 Start of development of
Volkswagen Group China's
own System-on-Chip

L2+ Standard Highway NoA



First car equipped
VW ID.Unyx07



TOPs	—————	128
Cameras	—————	6
Radars	—————	1
USS's	—————	12
Lidars	—————	0

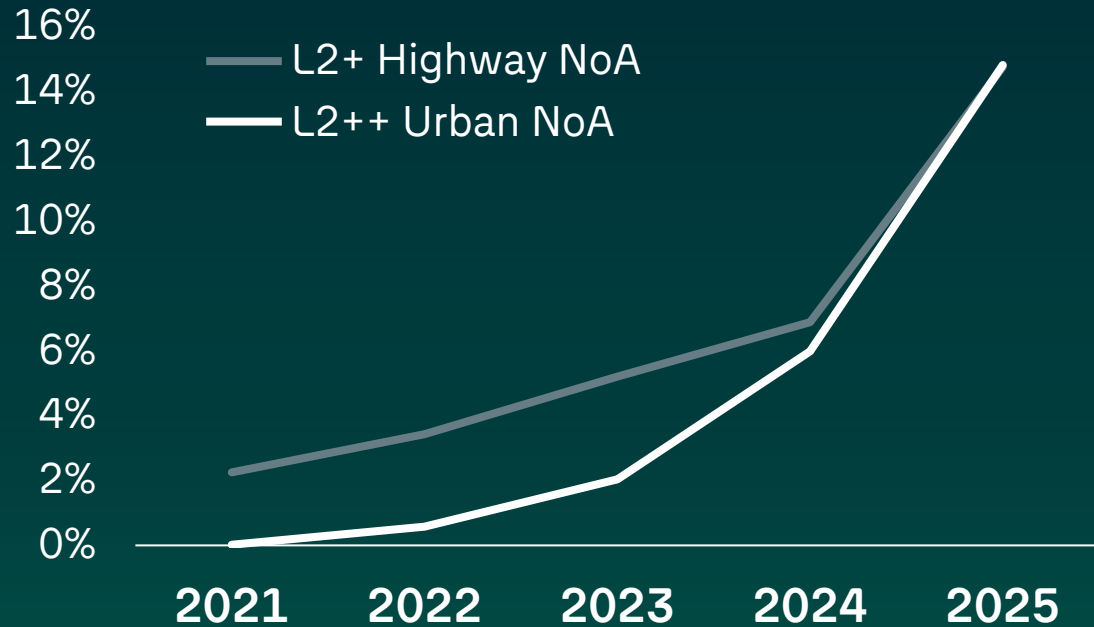
Agenda

- 1 Progress made
- 2 Market Update**
- 3 Delivery Roadmap
- 4 Technology Push

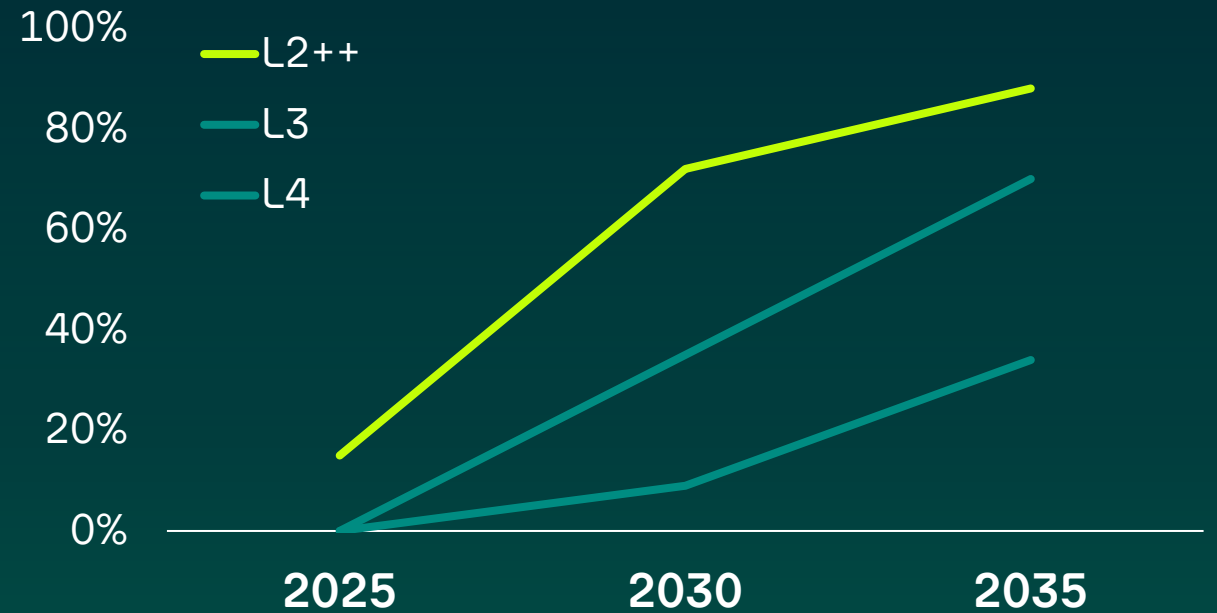
Status of ADAS market

L2++ Urban NoA becomes a mainstream feature, higher ADAS as decisive premium feature

Historic NoA penetrations



Forecast of L2++, L3 & L4 penetrations



Volkswagen addresses **safety first, high standards** become key selling point

Urban NoA catches up highway; **L3** viable with **30% adoption by 2030**

Intelligent driving crucial for new car purchases, esp. among **premium** vehicle buyers

Evolution of ADAS market

Reshaping of regulations, compute, features, and cost



Regulatory shift: ADAS moves from rating-based competition to regulation-driven market access

ADAS demand surges, **L2++ NoA reshaped by features, regulations, and cost dynamics**

Rising compute demands: Defining market tiers and chip development

Cost-performance balance: Vision leads for mass access, LiDAR for premium

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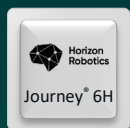
Working towards market entry of L3-ready systems

All solutions are flexible and modular for all platforms and architectures of the Group in China

L2++ Pro NoA

L2++ Premium NoA

L3-ready



420

11

1

12

0

Chip

TOPs

Cameras

Radars

USS's

Lidars



560

11

3

12

1

Chip

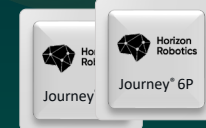
TOPs

Cameras

Radars¹

USS's

Lidars



2*560

11

5

12

4

2026

2027+

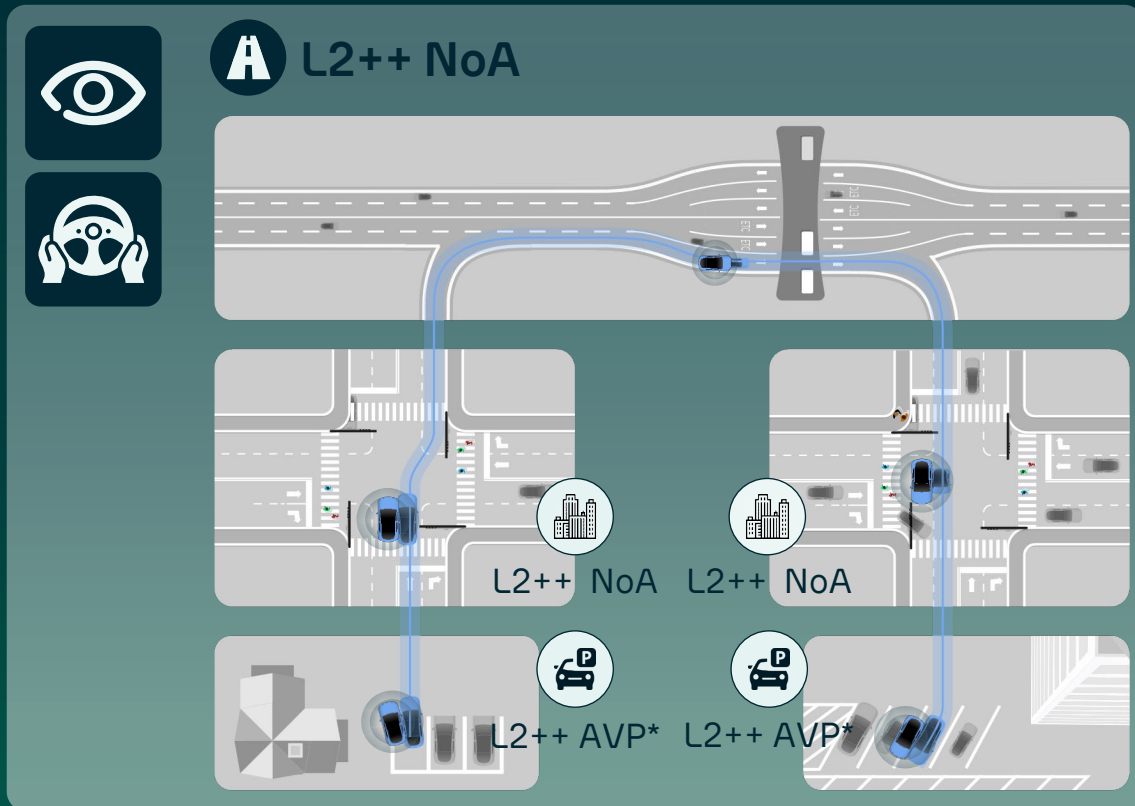
1. Corner Radar is optional

From L2++ to L3: Gradual situational expansion

Full reliance on vehicle in certain Operation Design Domains (ODD) – starting with highway

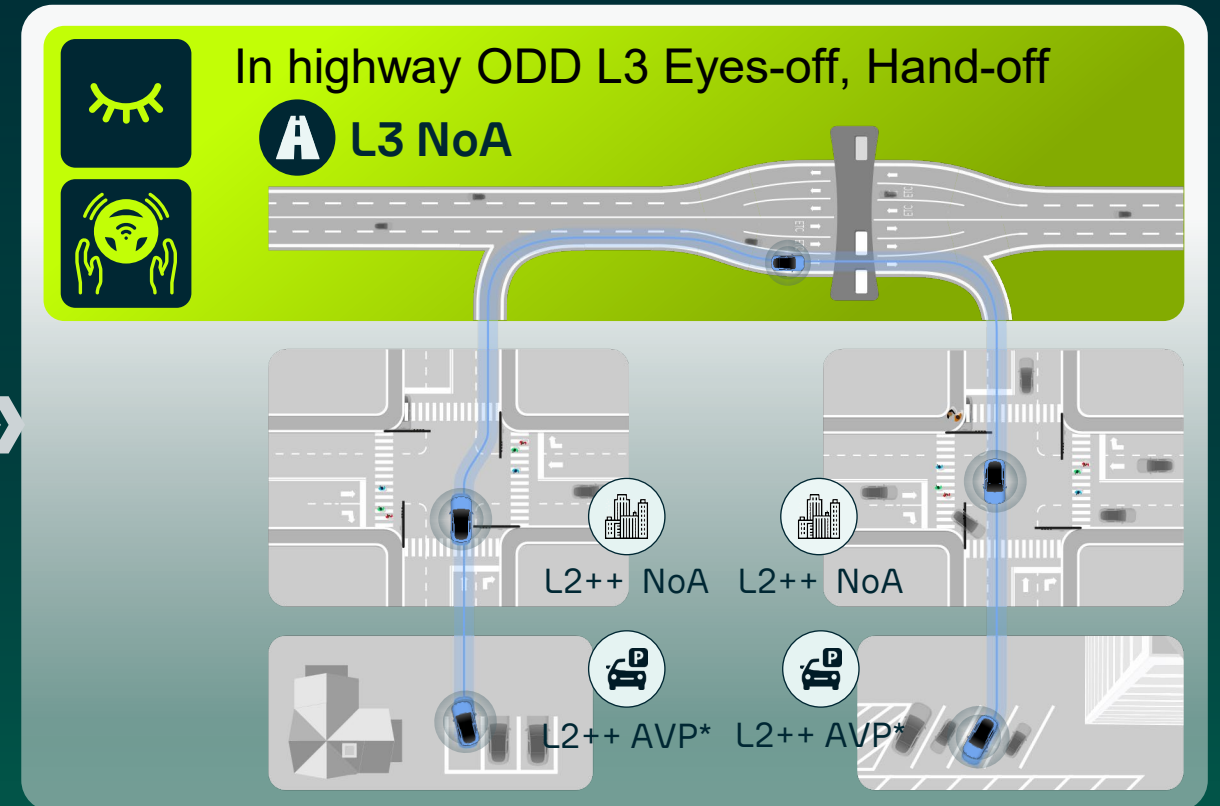
L2++ Eyes-on, hand-on

Automated vehicle supervised by Driver



L3

Vehicle fully liable in specific ODD's

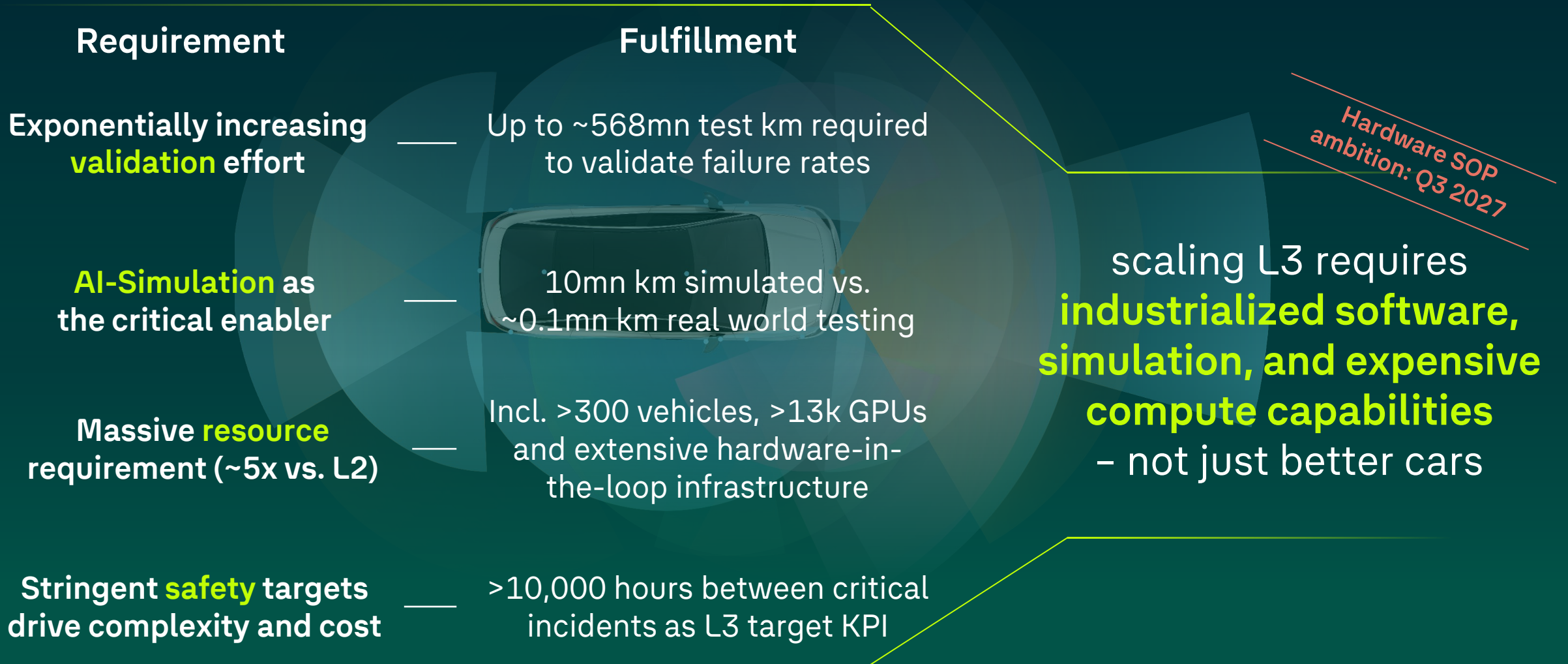


State-of-the-art in China

* Assisted Valet Parking

L3/L4: Exponential step-up in development efforts

Simulations as key enabler for scalable safety and economics



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Three key challenges to master automated driving

ADAS supplier need to overcome the gaps of data efficiency, generalization and scaling

Data efficiency gap



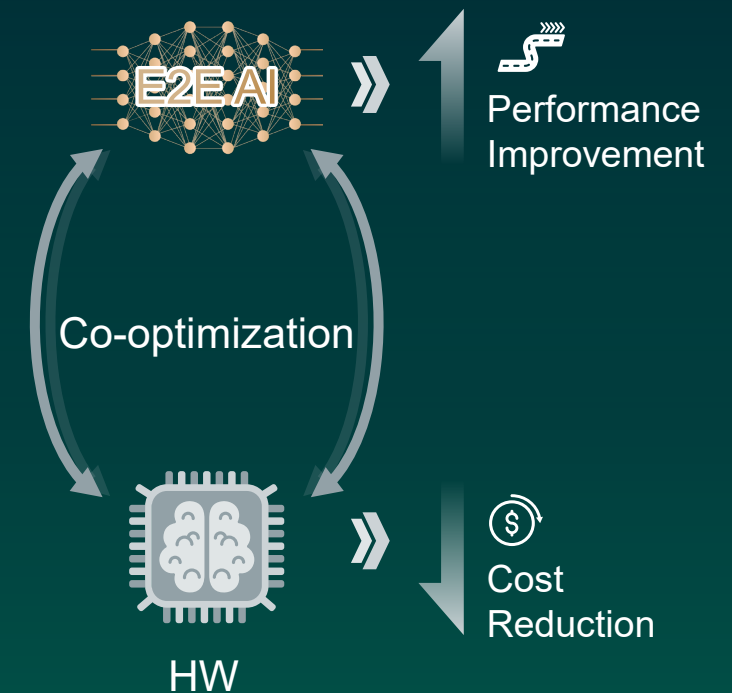
Massive data need to learn simple driving behaviors

Generalization gap



Complex to handle **unseen scenarios outside training area**

Scaling gap



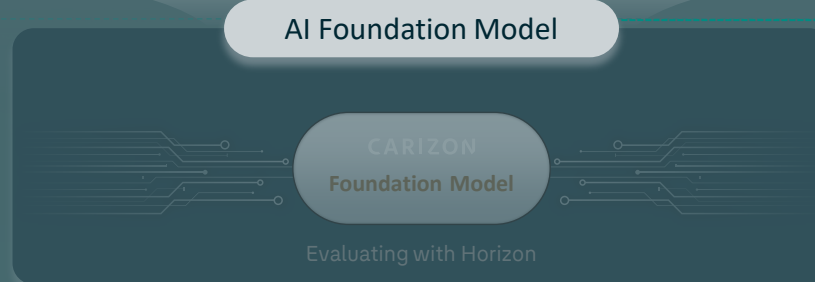
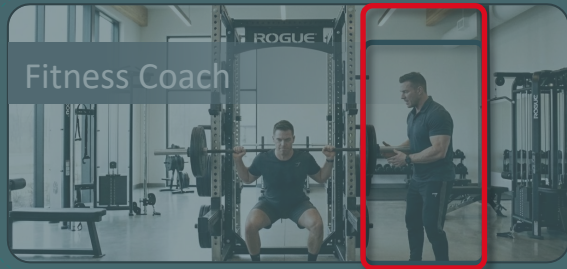
Low performance advance by additional data and scale

CARIZON's future fitness triangle

GAIA 2.0 World Model and Multimodal E2E HW & SW optimization as today's focus areas

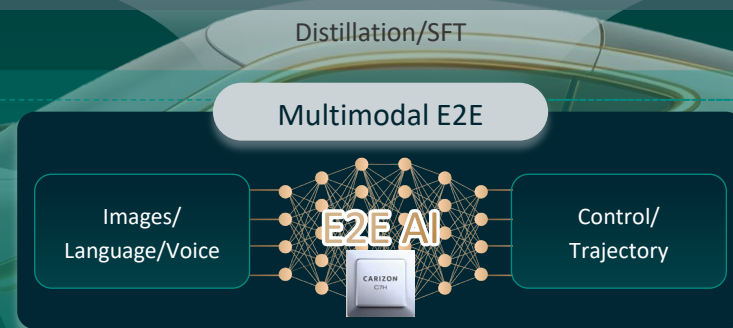
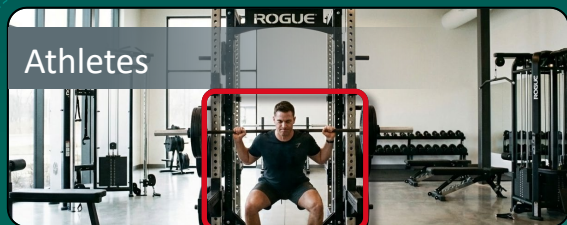


to **enhance data collection** and **validation efficiency**



to **enhance generalization capabilities**

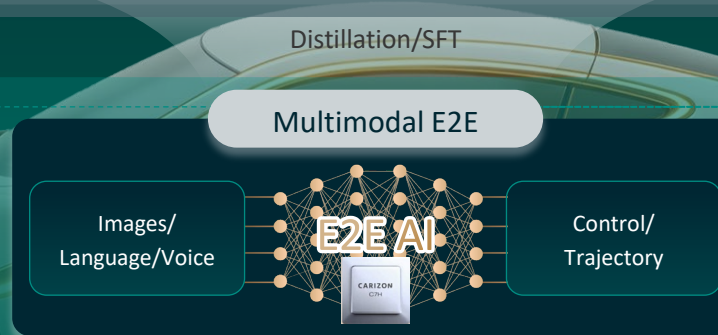
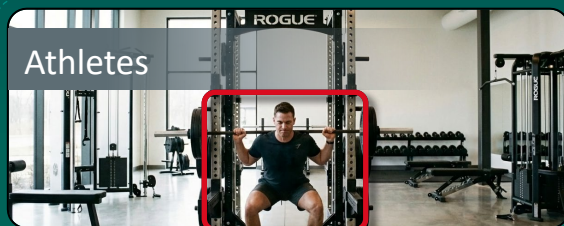
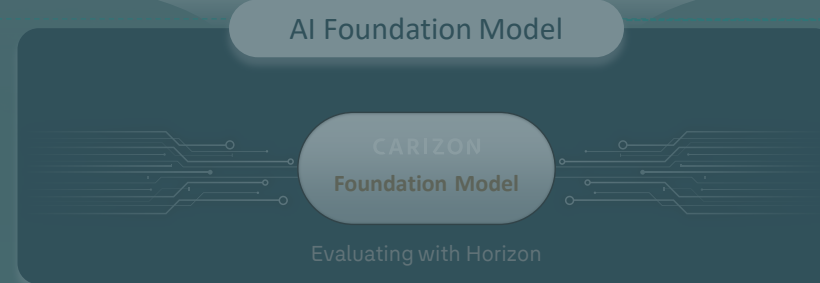
Due to limited time no focus of today's presentation



HW & SW optimization with in-house **SoC** to **enhance performance** and **reduce cost**

CARIZON's future fitness triangle

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to **enhance data collection** and **validation efficiency**

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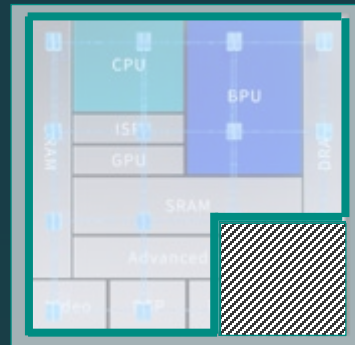
Inhouse SoC's: Vertical integration of chip design

Developing own SoC to meet surging compute demand at high performance and cost efficient

Utilized area
on chip
= efficient part

Unused area
on chip
= inefficient part

OFF-THE-SHELF SoC

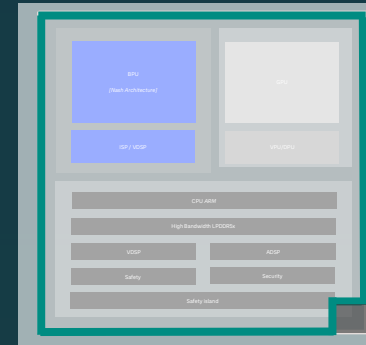


Standard design chip

Not utilized chip area

VS.

IN-HOUSE SoC



Chip designed for next-gen CEA computational requirements

Aligned to support VW's
(1) Multi-model Gen. AI,
(2) LLM, (3) VLA and
(4) Transformer

Target market of chip



General automotive market



VW Group

Optimization potential

Medium

High

Realized efficiency

Medium

High

Costs

Chip manufacturers with high gross margins

Lower cost by insourcing high-margin activities

CARIZON chip C7H: Engine of future EV intelligence

Powering cost-efficient, scalable automated driving for Volkswagen Group to start 2028

Greater Computing Power

The computing performance of key operators improved by

10x

More Operators

The number of supported high-precision operators has increased by more than

10x

Higher Efficiency

Tensor → Vector
Full floating-point computation support



Better Energy Efficiency

Designed and optimized for large language model, energy efficiency increased by

5x

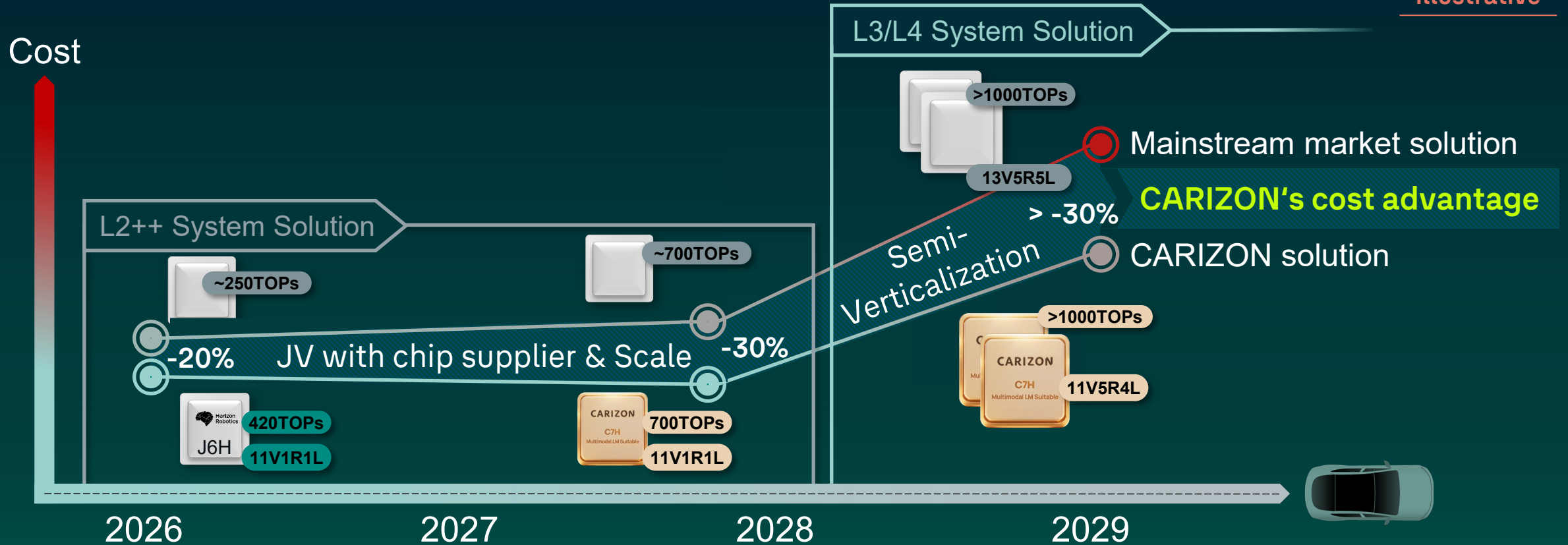
C7H positions the Group for the **structural shift toward intelligence and rising AD** compute demand

Full control of AD compute, lower system cost, and a HW-SW stack **optimized for VW's AD needs**

Mass-market AD via scalable 600-2,400 TOPs with high efficiency, low cost & compliance

Cost-efficient ADAS solution for the Group

Illustrative



Lower component cost due to Group scale and chip sourcing from JV partner

Significant **cost reduction** potential through **vertical integration** and in-house **SoC**

VW JVs benefit from **more favorable ECU** and **license pricing** vs. competition

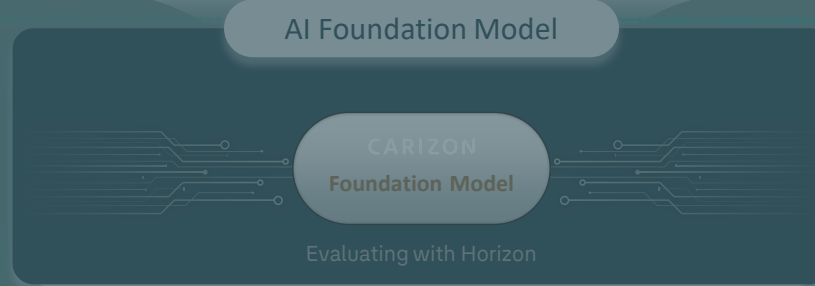
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GAIA 2.0 World Model and Multimodal E2E HW & SW optimization as today's focus areas



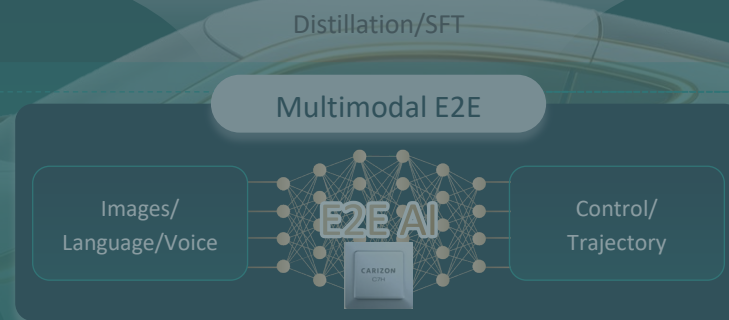
GAIA 2.0 World Model

to **enhance data collection** and **validation efficiency**



to **enhance generalization capabilities**

Due to limited time no focus of today's presentation



HW & SW optimization with in-house **SoC** to **enhance performance** and **reduce cost**

500 peta byte of driving data

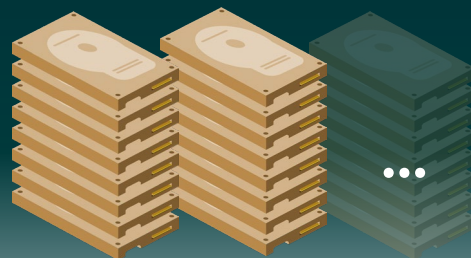
CARIZON has collected 30mn clips covering carious road scenarios

500PB

Data

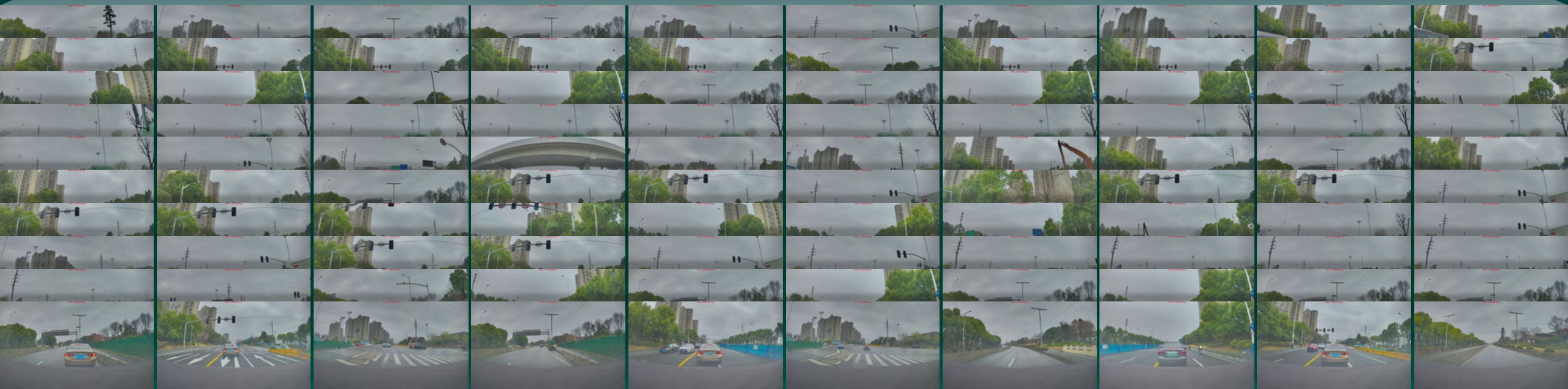
1,048,576

500GB Hard Drive



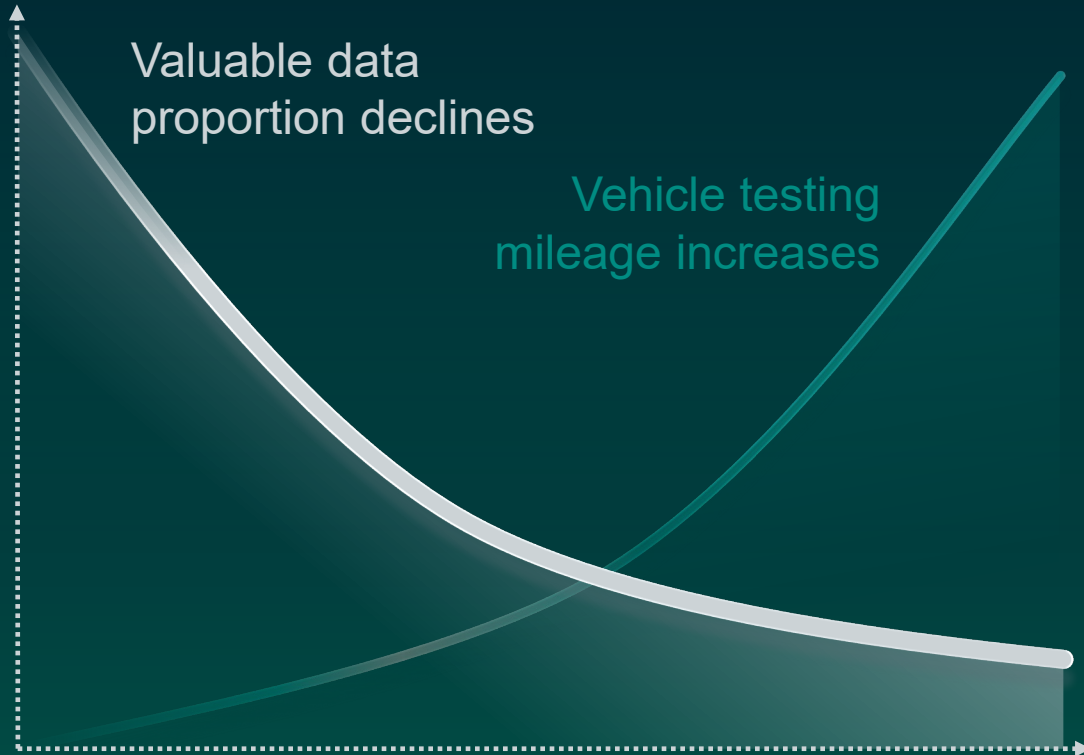
22 Trucks

Standard 20-foot Truck



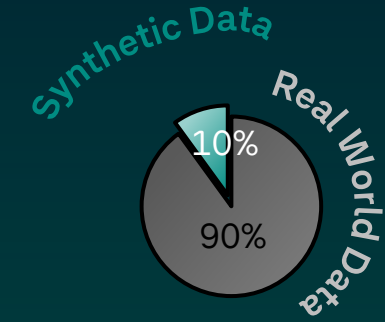
GAIA 2.0 boosts data collection & validation efficiency

GAIA as inhouse data engineering platform evolves to world model for AI driving intelligence

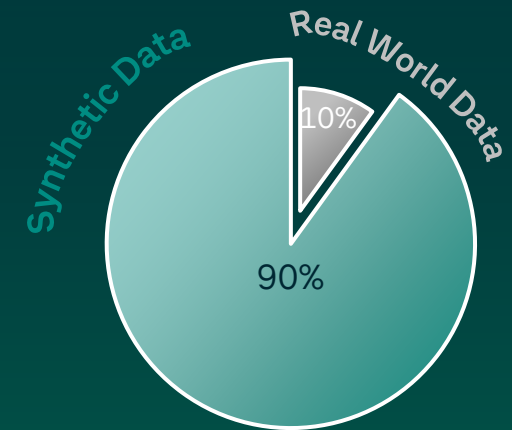


Difficult to collect long-tail scenarios, that provide data efficiency to improve model

From
GAIA 1.0



To
GAIA 2.0



GAIA 2.0 empowers **AI-generated simulations** of **realistic environments**

Please see CARIZON video
[GAIA 2.0 World Model](#)

GAIA 2.0 boosts efficiency and reduces costs



Increased mileage for improved efficiency

2025

100k km/day

10x

2026

1mn km/day



Validation cost reduced



Delivering on the Group's ambitions in China

VOLKSWAGEN GROUP
CHINA

Highly technologically advanced and cost-efficient ADAS solutions paired with "VW-reliability"



CARIZON delivers **integrated AI-powered ADAS** through full-chain **development**

ADAS offer highly **adaptable to end customer** requirements

On track to L3 and **simulation-driven and scalable validation** by GAIA 2.0

Cost competitiveness and holistic tech stack via **in-house SoC**

Range / consumptions / emissions

Model	Fuel consumption combined (WLTP)	Electrical consumption combined (CLTP)	CO ₂ emissions combined (CLTP)	Electric range combined (CLTP)
VW				
ID.UNYX 07	n/a	12.1 kWh/100 km	n/a	558 km
ID.UNYX 08	n/a	14.6-15.5 kWh/100km	n/a	630-730 km
ID.ERA 9X	2.41-2.72 l/100 km (WLTC)	19.7-20.9 kWh/100km	57.12-64.46 g/km (WLTC)	255-340 km
ID.AURA T6/CMP A Main SUV/CSP vehicles	Vehicles are not yet offered for sale. Consumption and emission data under review.			
AUDI E5	n/a	14.0-16.8 kWh/100 km	n/a	573-773 km
AUDI E7X	n/a	16.0-18.7 kWh/100 km	n/a	615-751 km
Magotan	5.80-6.38 l/100 km (WLTC)	n/a	137.46-151.21 g/km (WLTC)	n/a
Magotan PHEV	2.42 l/100 km (WLTC)	14.30 kWh/100 km	57.35 g/km (WLTC)	127 km
Passat	5.93-6.41 l/100 km (WLTC)	n/a	140.54-151.92 g/km	n/a
Passat PHEV	2.40-3.70 l/100 km (WLTC)	12.70-14.20 kWh/100 km	56.88-87.69 g/km	63 km

Range / consumptions / emissions

Model	Fuel consumption combined (WLTP)	Electrical consumption combined (WLTP)	CO ₂ emissions combined (WLTP)	Electric range combined (WLTP)
VW				
Golf 8 GTI	7.3 – 7.1 l/100km	n/a	167 -162 g/km	n/a
ID. Buzz Pro	n/a	20.5-21.7 kWh/100km	n/a	420 – 461km
ID. Buzz GTX	n/a	21.6 – 20.5 kWh/100km	n/a	402 – 423km
ID. Buzz LWB Pro	n/a	21.2 – 19.5 kWh/100km	n/a	487km
ID. EVERY1, ID. Polo, ID.Cross and new VW Atlas	The vehicle is not yet offered for sale and is therefore not subject to Directive 1999/94/EC. Consumption and emission data under review.			
Caravelle	7.9 – 7.2 l/100km	n/a	207 – 188 g/km	
ID.UNYX 08, 09, ID.AURA and ID.ERAs	The vehicles are not offered for sale in Europe.			
Tayron	0.4 – 0.8 l/100km	17.2 – 23.9 kWh/100km	9 – 18 g/km	n/a
T-Roc	6.0 – 5.5 l/100km	n/a	137 – 125 g/km	n/a

Range / consumptions / emissions

Model	Fuel consumption combined (WLTP)	Electrical consumption combined (WLTP)	CO ₂ emissions combined (WLTP)	Electric range combined (WLTP)
Škoda				
Epiq	The vehicle is not yet offered for sale and is therefore not subject to Directive 1999/94/EC. Consumption and emission data under review.			
Enyaq	n/a	15.7 - 20.3 kWh/100km	n/a	565 - 589km
Enyaq Sportline	n/a	15.8 - 16.6 kWh/100km	n/a	410 - 428km
Elroq 85	n/a	15.2 - 16.6 kWh/100km	n/a	540 - 580km
Vision 7S	The vehicle is not yet offered for sale and is therefore not subject to Directive 1999/94/EC. Consumption and emission data under review.			
Porsche				
Porsche 911 Carrera S	10.7 - 10.2 l/100km	n/a	242 - 230 g/km	n/a
Porsche 911 Carrera	10.7 - 10.1 l/100km	n/a	244 - 230 g/km	n/a
Porsche GT3	13.8 - 13.7 l/100km	n/a	312 - 310 g/km	n/a

Range / consumptions / emissions

Model	Fuel consumption combined (WLTP)	Electrical consumption combined (WLTP)	CO ₂ emissions combined (WLTP)	Electric range combined (WLTP)
Bentley				
Continental GT Speed	10.3 l/100 km	28.1 kWh/100km	29 g/km	n/a
Bentayga Speed	14.7 l/100 km	n/a	335 g/km	n/a
Lamborghini				
Revuelto	11.9 l/100km	n/a	276 g/km	n/a
Temerario	11.2 l/100km	4.3 kWh/100 Km	272 g/km	n/a
Urus S	14.1 l/100km	n/a	320 g/km	n/a
Urus SE	2.9 l/100km	39.5 kWh/100 Km	51 g/km	n/a
SEAT/CUPRA				
Born	n/a	14.9 - 16.7 kWh/100km	n/a	up to 594km
Raval	The vehicle is not yet offered for sale and is therefore not subject to Directive 1999/94/EC. Consumption and emission data under review.			
Tavascan VZ 250 kW 77kWh	n/a	16.6 kWh/100km	n/a	up to 522km
Terramar VZ 1.5 e-HYBRID 200 kW	0.4-0.5 l/100 km	7.6-19.0 kWh/100 km	10-12 g/km	n/a

Range / consumptions / emissions

Model	Fuel consumption combined (WLTP)	Electrical consumption combined (WLTP)	CO ₂ emissions combined (WLTP)	Electric range combined (WLTP)
Audi				
A5	7.7 – 4.8 l/100km	n/a	176 – 125 g/km	n/a
S6 e-tron	n/a	17.5 – 16.5 kWh/100km	n/a	608 – 649km
Concept C	The vehicle is not yet offered for sale and is therefore not subject to Directive 1999/94/EC. Consumption and emission data under review.			
AUDI E5 Sportback and E7X	These vehicles are not offered for sale in Europe.			
Q3	9.0-8.5 l/100km	n/a	205-193 g/km	n/a
Q3	2.2-1.7 l/100km	15.0 – 13.9 kWh/100km	49-39 g/km	n/a
Q3 Sportback	2.2-1.7 l/100km	15.1 – 14.0 kWh/100km	50-40 g/km	n/a
Q4 e-tron 55	n/a	16.8 – 19.5 kWh/100km	n/a	449 – 523km
Q5	7.9-5.9 l/100km	n/a	180-148 g/km	n/a
Q6 e-tron	n/a	17.5 – 18.4 kWh/100km	n/a	566 – 598km
Q8 55 e-tron	n/a	20.6 – 24.4 kWh/100km	n/a	460 – 595km
S5 Avant	7.5-7.9 l/100km	n/a	169-180 g/km	n/a
Scout				
Terra	The vehicle is not yet offered for sale and is therefore not subject to Directive 1999/94/EC. Consumption and emission data under review.			
Traveler	The vehicle is not yet offered for sale and is therefore not subject to Directive 1999/94/EC. Consumption and emission data under review.			