

NEUE KLASSE: A TRUE SDV FOR BMW'S NEXT LEVEL DIGITAL EXPERIENCES.

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NEUE KLASSE: SHOWCASES THE POTENTIAL OF A SOFTWARE DEFINED VEHICLE.

01

CUSTOMER EXPERIENCE

A new level of personalization,
intelligence and driver
orientation.

A true companion.

02

TECHNOLOGY ENABLERS & PARTNERING

Software and hardware
architecture to ensure flexibility
in order to provide the perfect
customer experience.

State of the art.

03

SCALABILITY

Global architecture with local
solutions, strong partnerships
and Over the Air Software
Updates.

Efficient – resistant – fast.

01

CUSTOMER EXPERIENCE.

A true companion.

BMW PANORAMIC iDRIVE: FOUR KEY ELEMENTS.

BMW 3D Head-Up Display

BMW Panoramic Vision

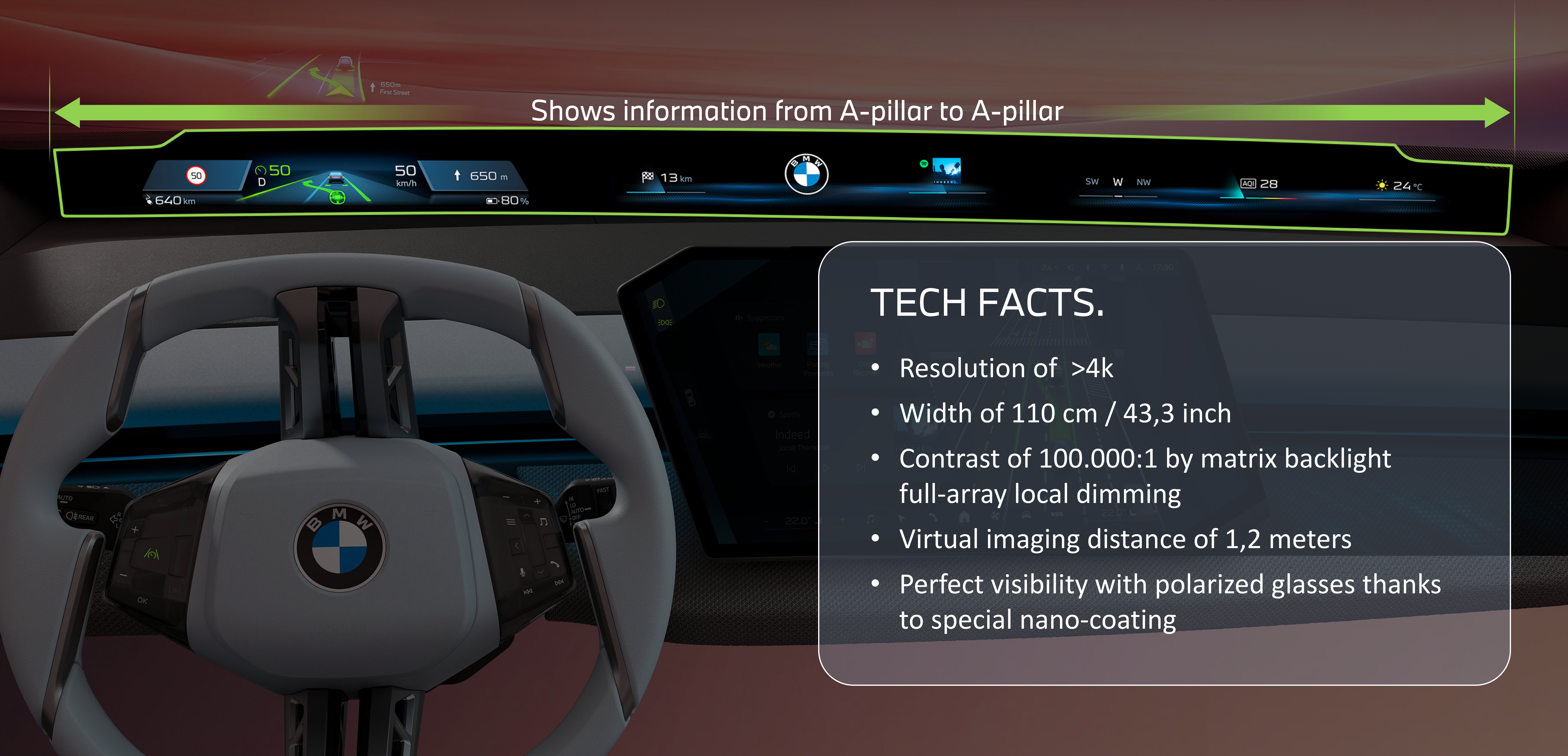
Central Display

Steering Wheel with Shy-Tech



THE BMW PANORAMIC VISION.

Shows information from A-pillar to A-pillar



TECH FACTS.

- Resolution of >4k
- Width of 110 cm / 43,3 inch
- Contrast of 100.000:1 by matrix backlight full-array local dimming
- Virtual imaging distance of 1,2 meters
- Perfect visibility with polarized glasses thanks to special nano-coating

DRIVER'S LINE OF SIGHT: PANORAMIC VISION AND 3D HEAD-UP DISPLAY.

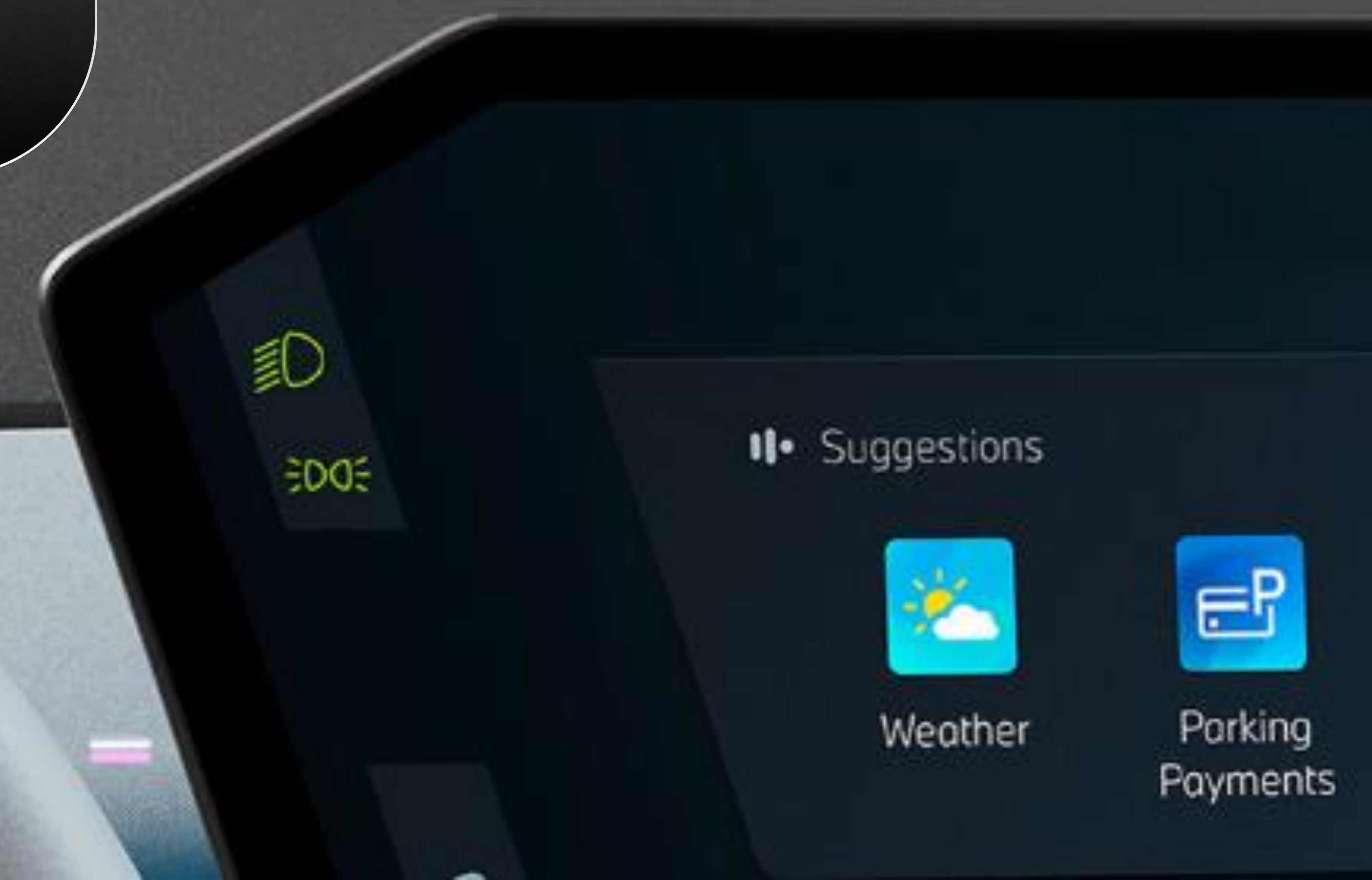
Shows integrated
navigation and assisted
driving information

Driving assistance functions

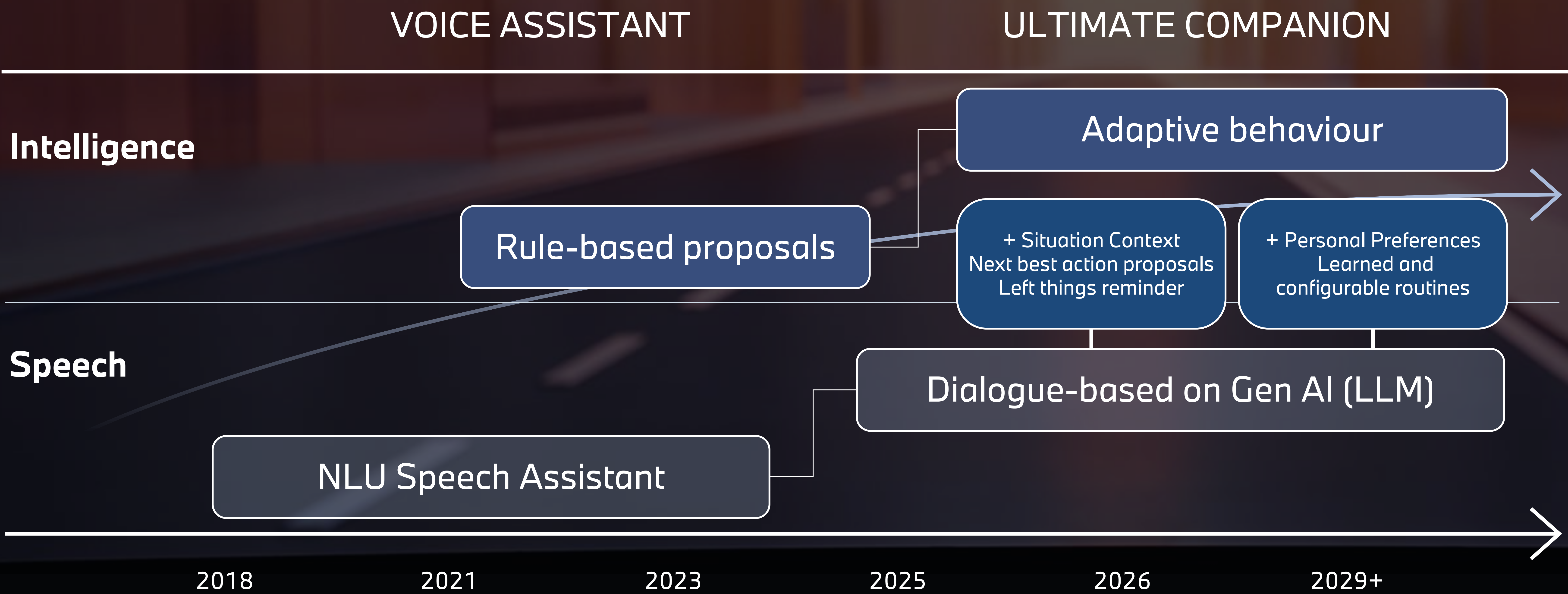
Important contextual information



The most important driving information is
projected directly into the driver's line of sight



NEXT-GEN BMW INTELLIGENT PERSONAL ASSISTANT WITH LARGE LANGUAGE MODEL TECHNOLOGY.



- **90%** have used voice at least once
- **277.800.000** voice entries since 01/2024
- Every **3rd customer** uses voice regularly (34%)
- Absolute voice usage growing from BMW OS8 to OS9 by **+49%**
- Performance enhancement
- Latency **<1.5s**
- Recognition rate **> 96%**

Powered by Amazon Alexa
Large Language Model.

Enabling fast and natural conversation,
starting with the navigation domain.

02

TECHNOLOGY ENABLERS & PARTNERING.

State of the art.

BMW'S SOFTWARE-DEFINED VEHICLE IS THE DELIVERY PLATFORM TO OUR DIGITAL CUSTOMER PROMISE.

FIVE PILLARS ARE KEY TO REALIZING THE SDV POTENTIAL.



Scalability of hardware & software layers leverages development across segments.



Updateability keeps features & platforms fresh across generations.



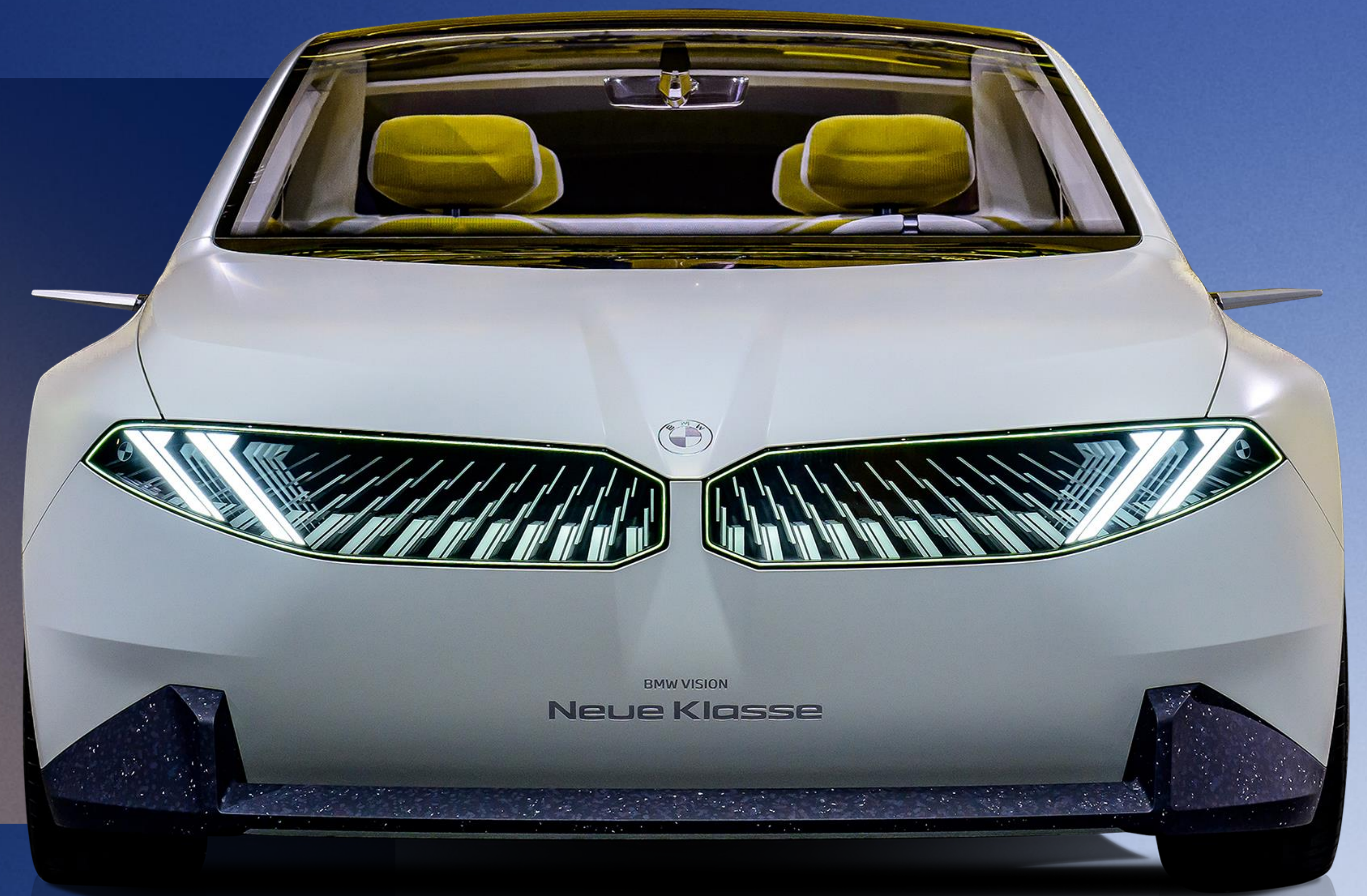
Evolutionary code-base across gens ensures feature continuity & software re-use.



Platformization de-couples function development from fast-moving enablers.



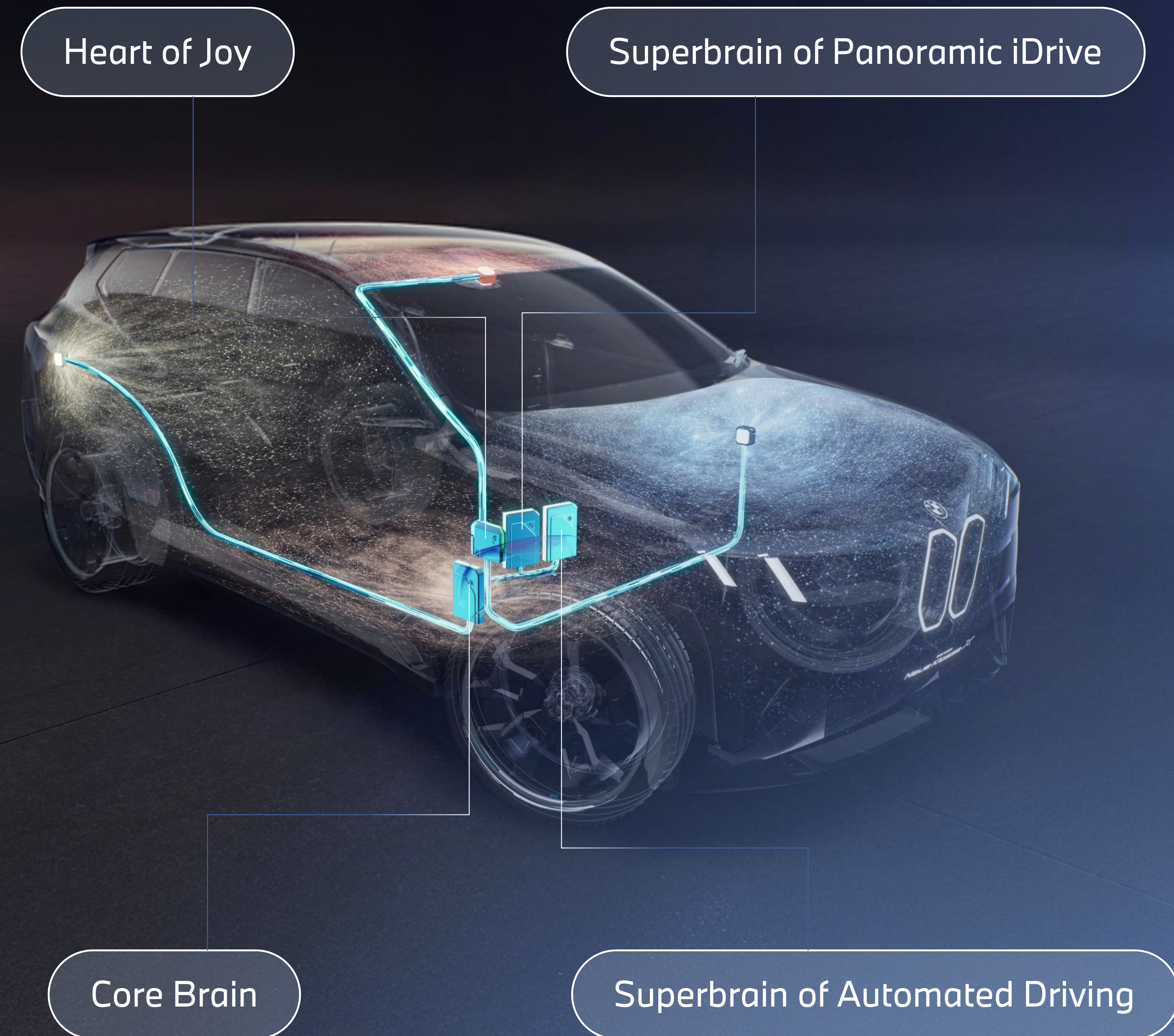
Globalization of developer network effectively uses independent contributions.



THE 4 SUPERBRAINS OF THE NEUE KLASSE.

CENTRALIZATION OF COMPUTE.

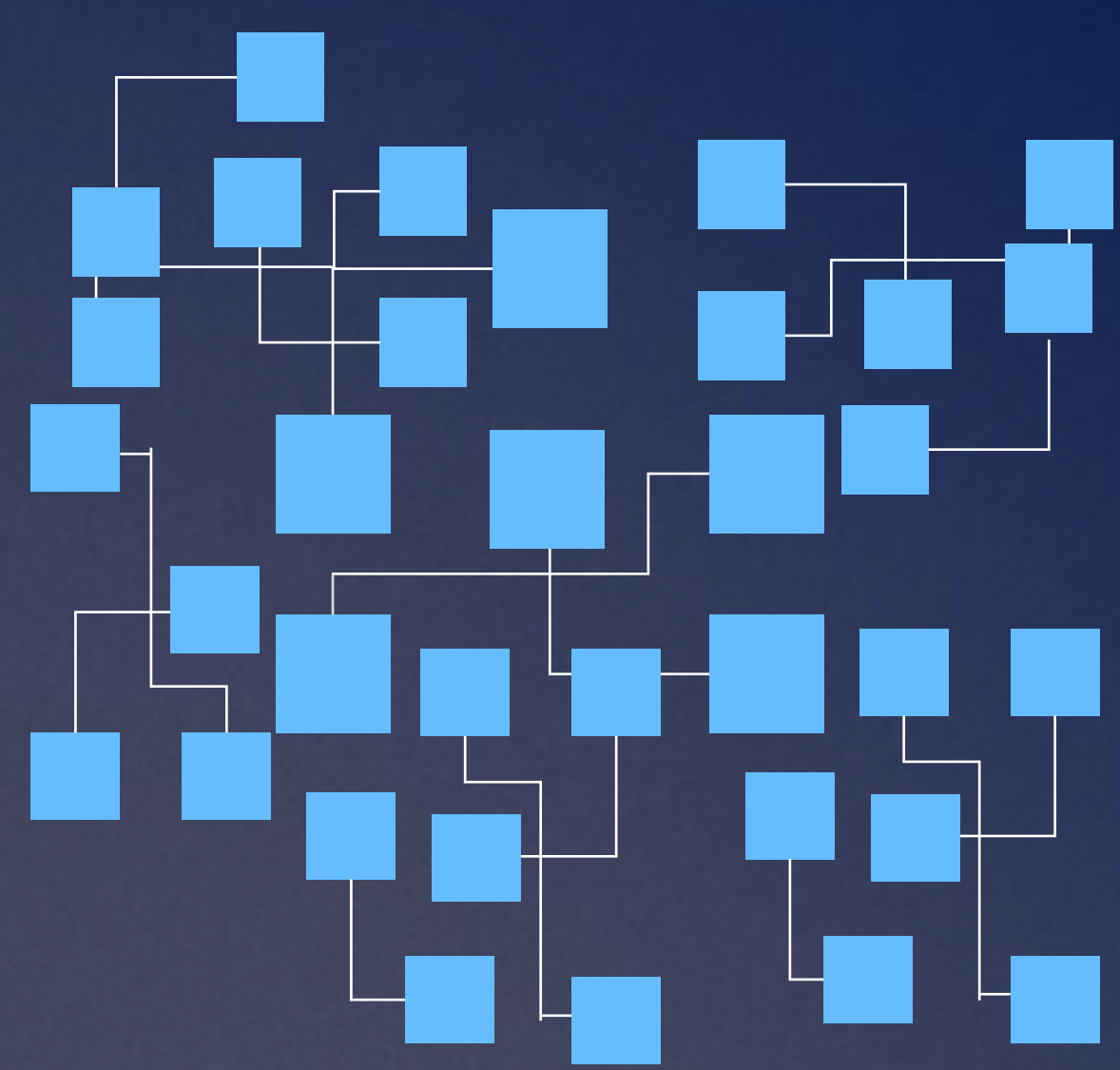
- Co-location of four Superbrains for efficiency
- Increased performance, decreased complexity
- Future-proof with headroom for software & hardware upgrades
- Smart on-/offboard data processing
- Optimized energy consumption:
Compute platforms < 400W



THE EVOLUTION OF BMW'S E/E ARCHITECTURE.

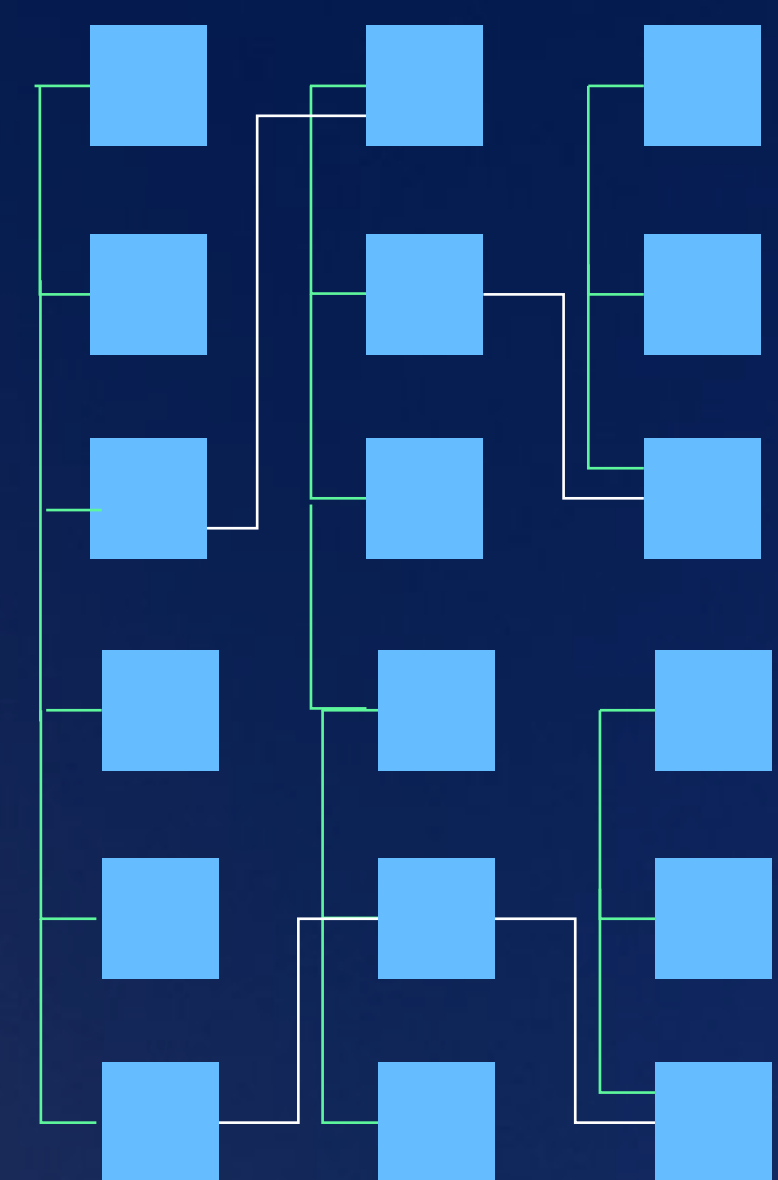
NOW WITH ZONAL ARCHITECTURE AND
CENTRALIZATION OF PERFORMANCE COMPUTE.

LOCAL



until mid 90s

DISTRIBUTED



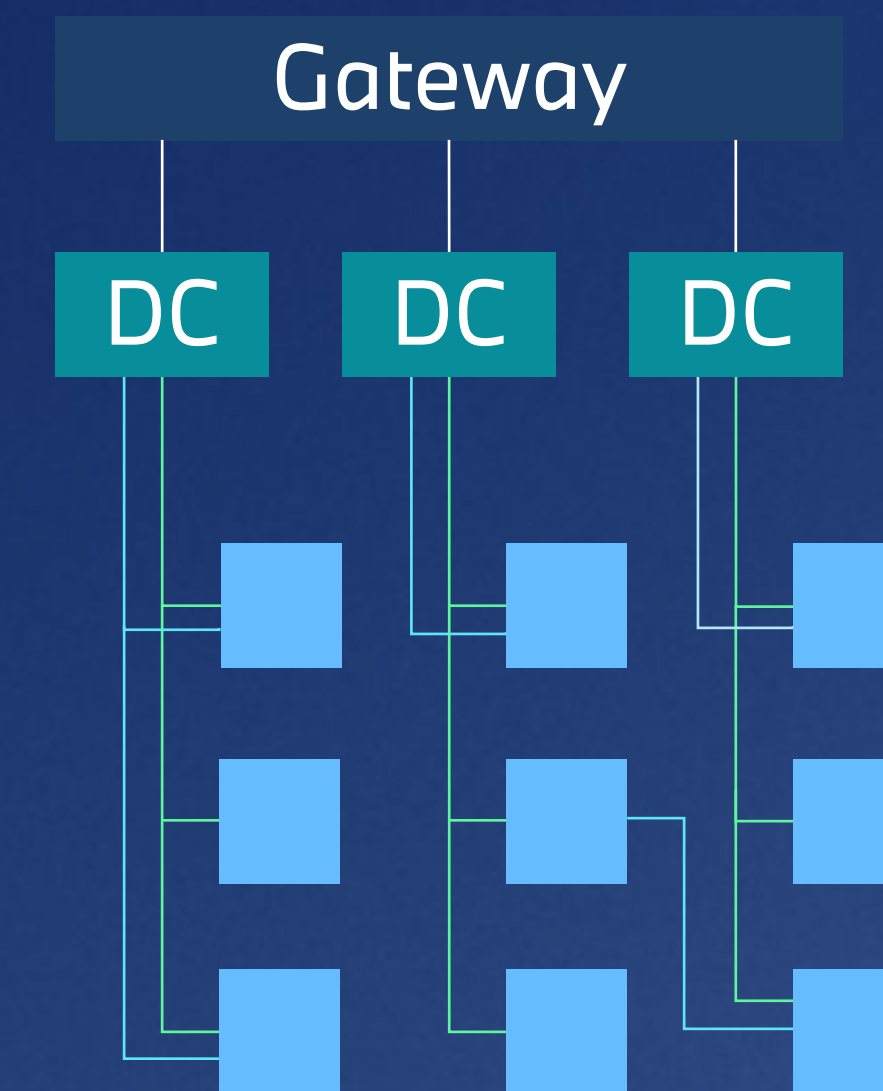
starting in 90s

CENTRAL GATEWAY



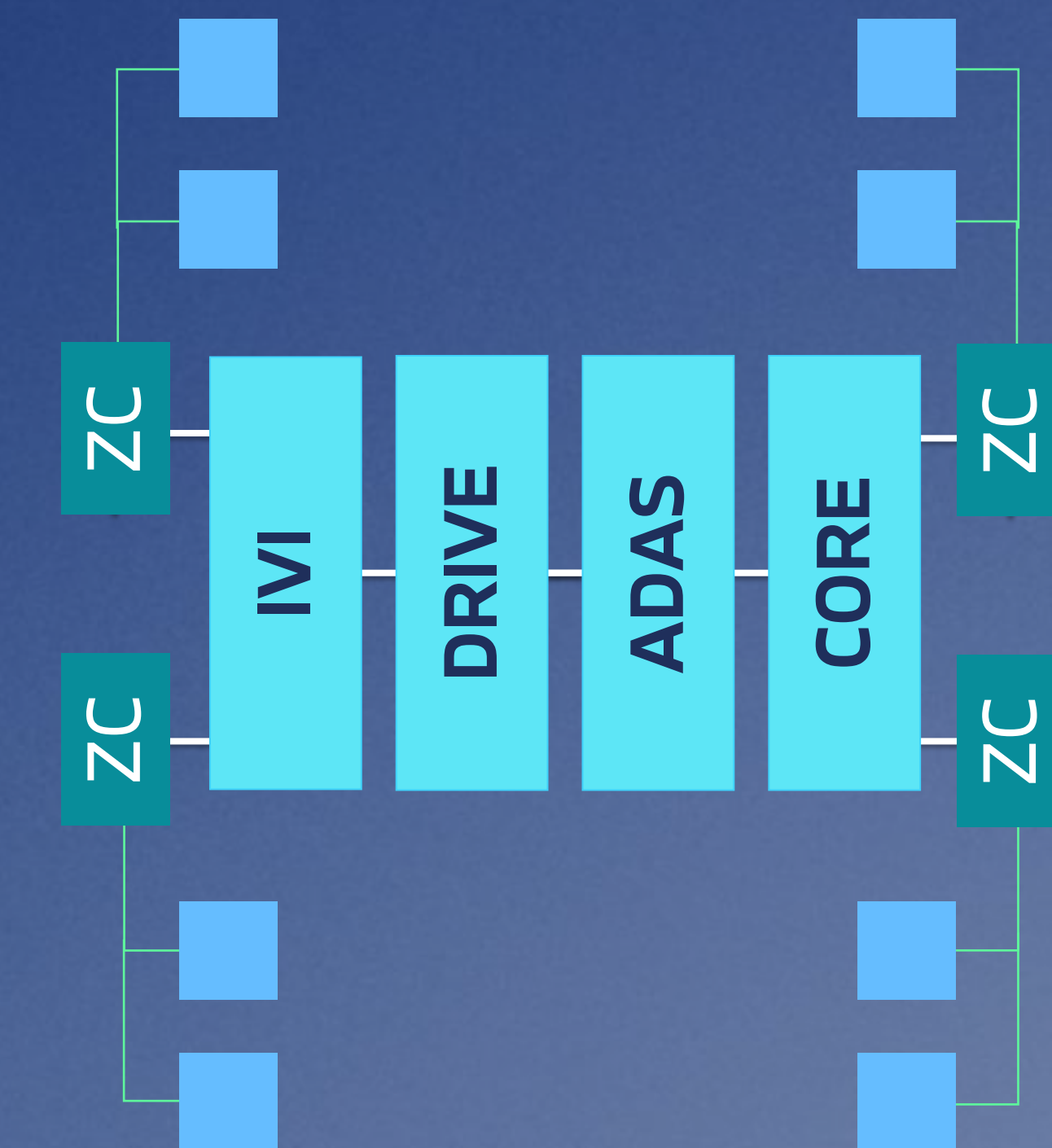
2013 – 2018

DOMAIN



2021

ZONAL



2025

✚ Zonal architecture with centralization of performance compute is the foundation for SDV. Scalable solution for complete range of vehicles & all powertrain variants.

NEUE KLASSE IS BASED ON A COMPLETELY NEW E/E- AND SOFTWARE ARCHITECTURE TO TAKE AI-POWERED EXPERIENCE TO A NEW LEVEL.

FUNCTIONAL DOMAIN

BODY & COMFORT

INFOTAINMENT

AUTOMATED DRIVING

DRIVING

Software applications, Functionalities & Features



Software platforms

Core platform

Operating system X

ADAS platform

Driving platform

Middleware

Shared Service Layer for Over-The-Air Updates, Cyber Security, AI Platforms, Data Management, etc.

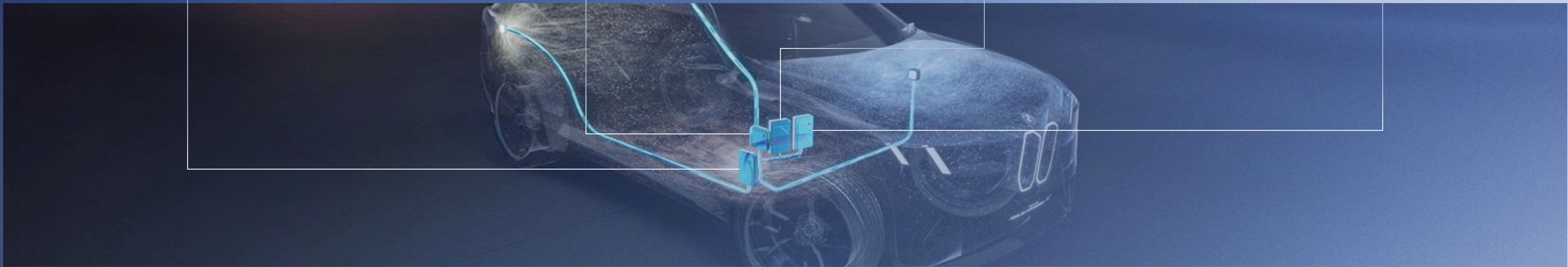
Hardware

Core Brain

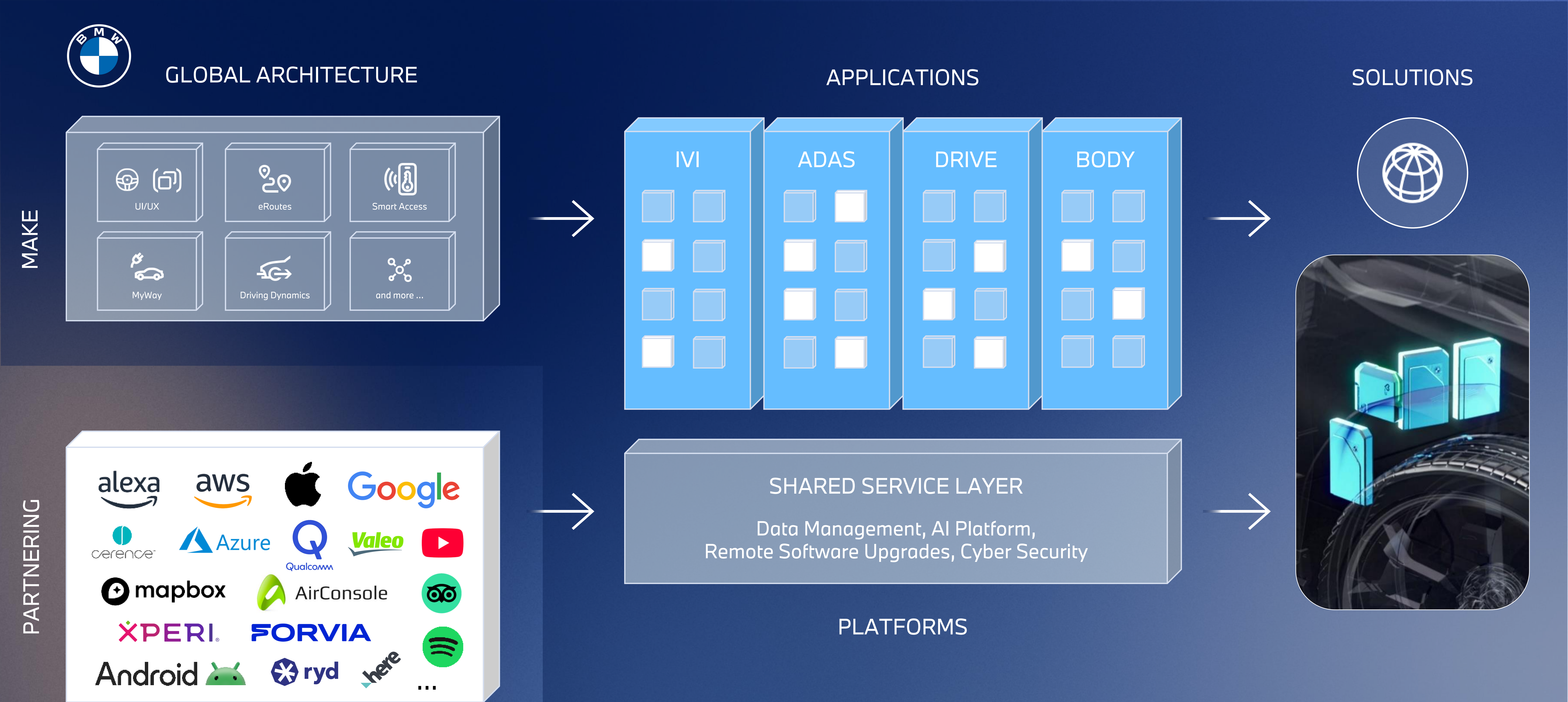
Brain of Panoramic iDrive

Brain of Automated Driving

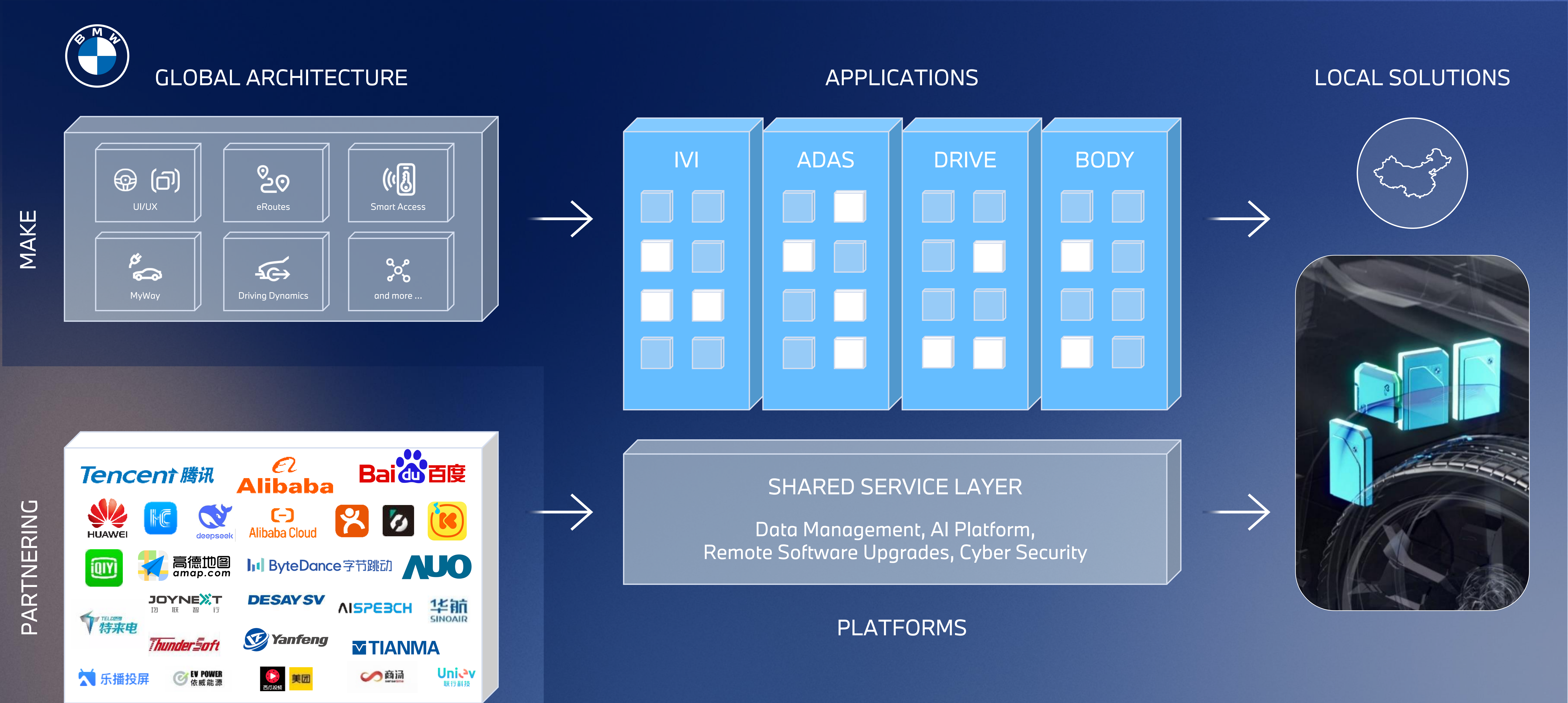
Heart of Joy



BMW GROUP MASTERS THE TECH STACK AND FOLLOWS A PICK-THE-BEST APPROACH. 'MAKE' AND INTEGRATION CAPABILITIES ARE KEY.



BY MASTERING THE SW INTEGRATION AND SW SERVICE LAYER BMW IS ABLE TO OFFER MARKET-SPECIFIC SOLUTIONS.



OVER-THE-AIR (OTA) SOFTWARE UPDATE KEEPS US FLEXIBLE. CUSTOMERS CHOICE, FUNCTIONALITY, SECURITY & QUALITY.

FULL UPGRADEABILITY AS ESSENTIAL ENABLER TO KEEP THE WHOLE FLEET UP-TO-DATE AND SECURE.



LARGEST OTA FLEET

10+ M.
and counting

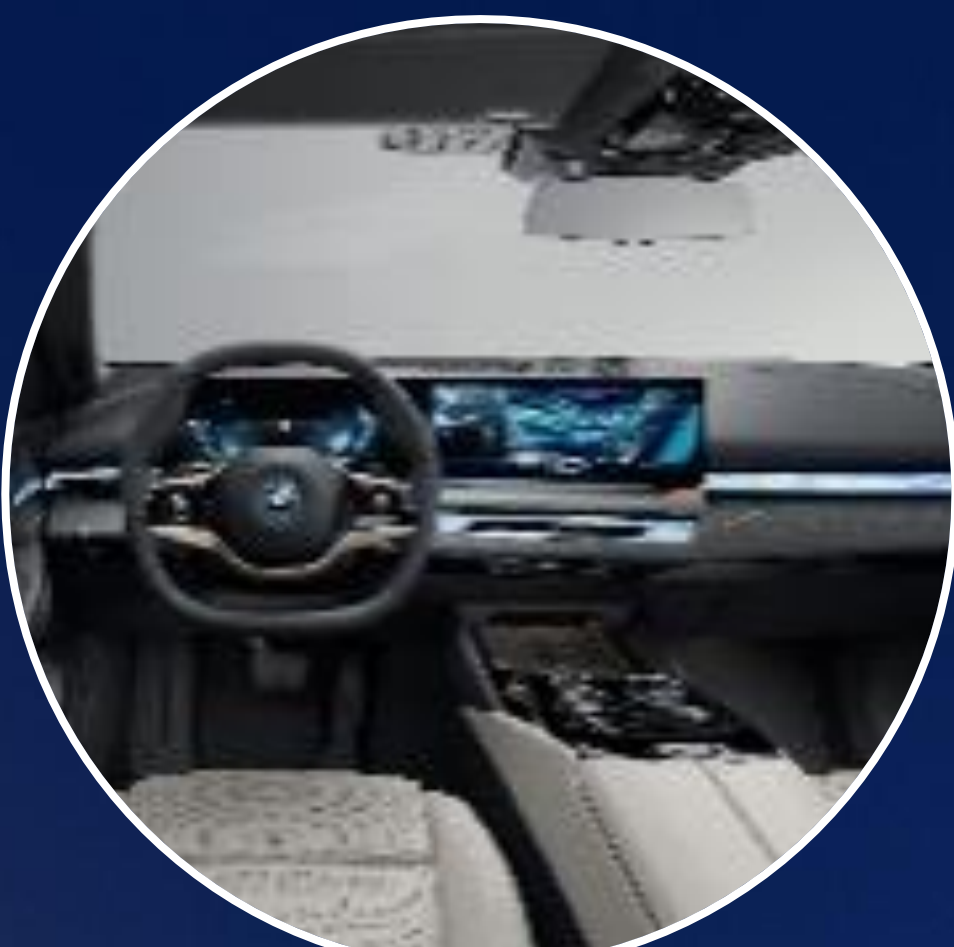
60+
models

3 brands
(BMW, MINI, RR)



ROLLS-ROYCE
MOTOR CARS LTD

ALL FUNCTIONAL DOMAINS



Infotainment



Driving



ADAS

Body & Comfort

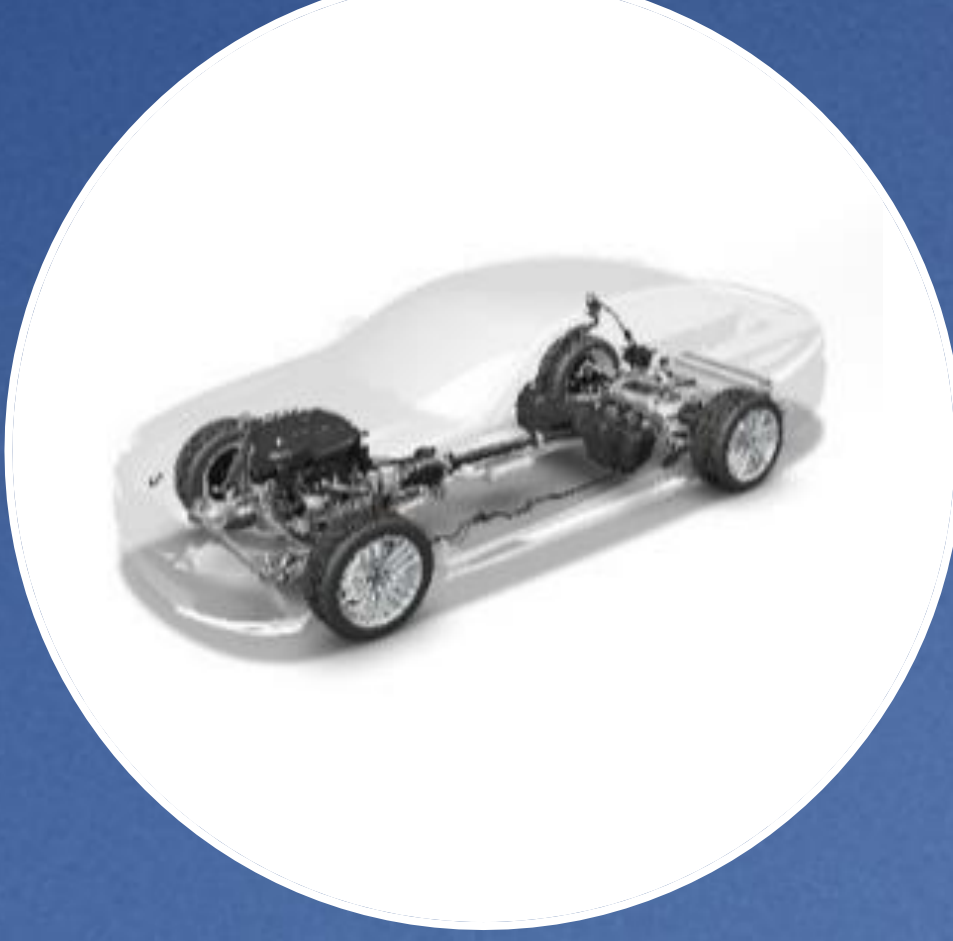
ALL POWERTRAINS



BEV



PHEV



ICE

ALWAYS FRESH (over-the-air)

20 min installation time
(industry benchmark)
120+ upgrades: features &
quality improvements
(since 2019)



Recent examples for:
NEW FEATURES & FUNCTIONAL UPDATES

Infotainment:

- „Curve-Ahead View“
- Video Streaming & In-Car Gaming
- Parking Payments
- QLOCKTWO

ADAS:

- Remote Control Parking
- Trailer Assistant
- Exit Warning
- Front Collision Warning with brake intervention

Body:

- Exterior Light Animations

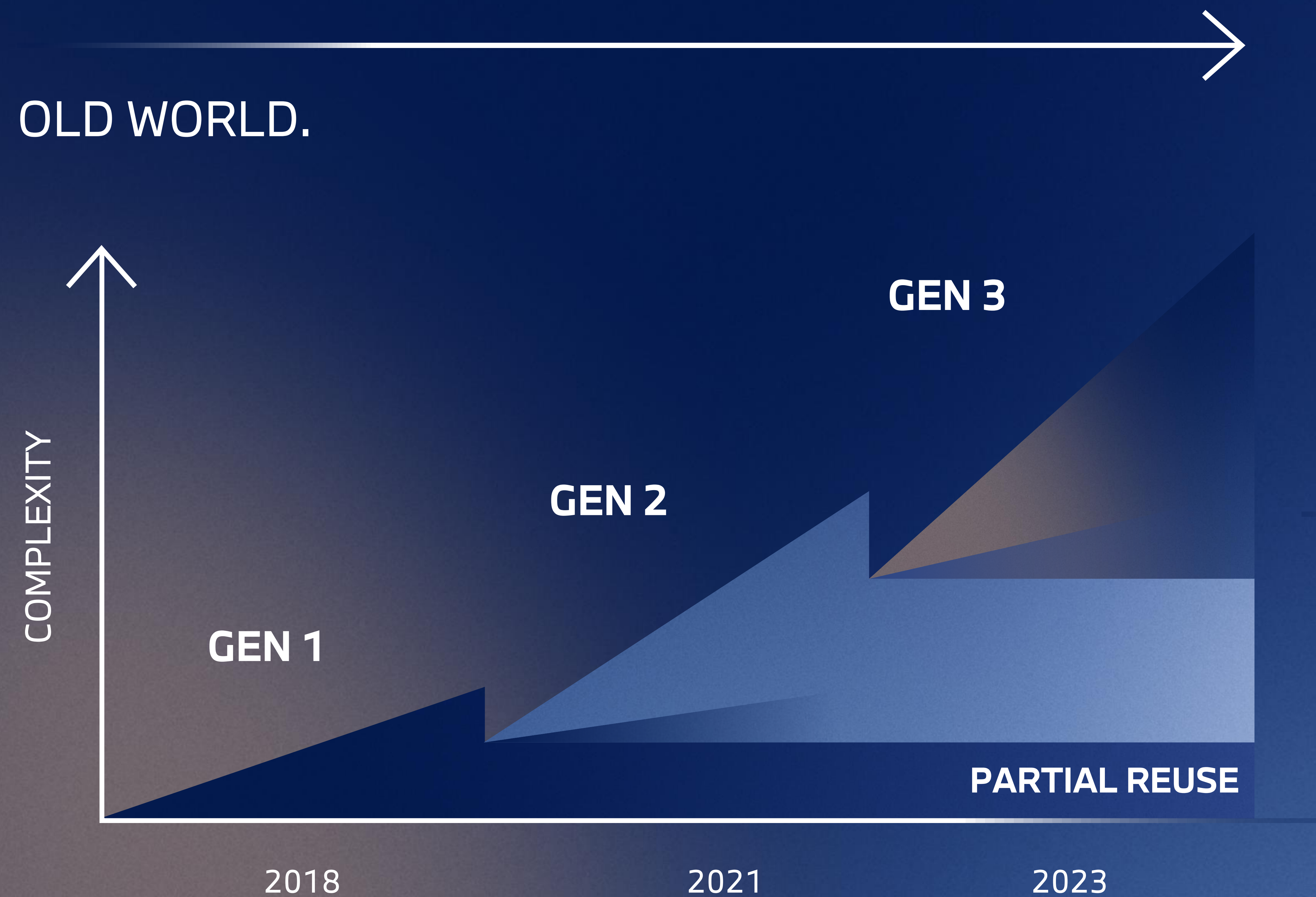
03

SCALABILITY.

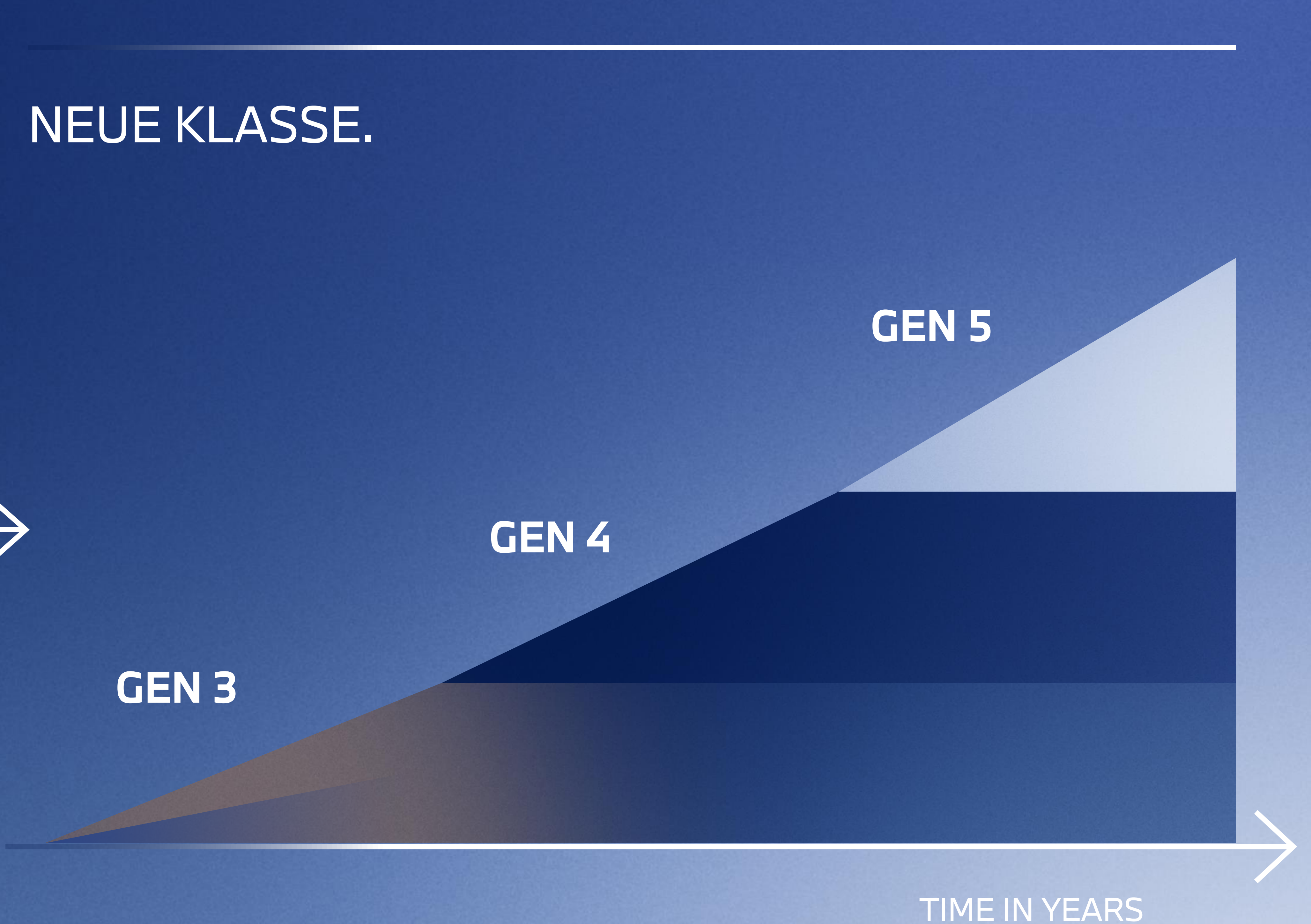
Efficient – resistant – fast

SOFTWARE IS IN THE CENTER OF BMW: GENERATIONS VS CONTINUITY.

EVOLUTIONARY, SCALABLE PLATFORMS ARE ESSENTIAL
TO ENABLE SOFTWARE CONTINUITY AND RE-USE.



New supplier constellation and
platform for every generation ...
Increasing effort across generations
with increasing code size ...



... continuity and reuse of software.
... evolution of hardware & semiconductors.
... future BMW models will receive updates via backward
integration from successor generations.

ONE PRODUCT APPROACH FOR MAXIMUM REUSE AND FUTURE INNOVATIONS.

A CLEAR STRATEGY FOCUSING ON ONE CORE INFOTAINMENT SOFTWARE STACK.

“One Product” approach.



CROSS BRAND
CROSS HARDWARE
CROSS GENERATION



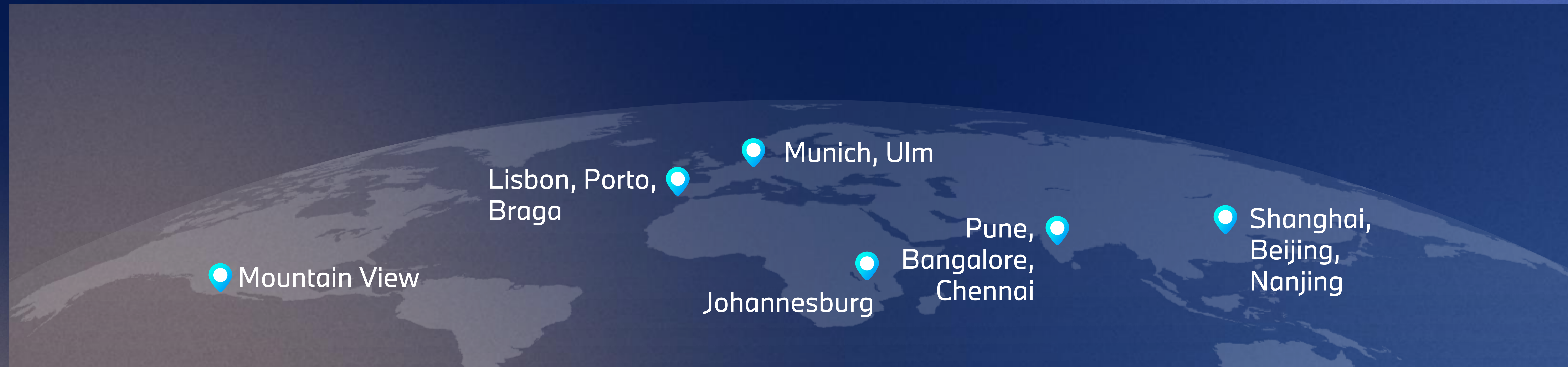
Core product software stack: Applications, Infrastructure, Common Services, ...

2021 generation

2025 generation

car-specific configurations

VEHICLE SOFTWARE AT BMW GROUP IS DEVELOPED IN A HIGHLY PRODUCTIVE GLOBAL NETWORK OF ~ 10.000 SOFTWARE ENGINEERS.



... enabled by
high performance
development toolchain.

- **24/7** development & testing
- 130x more output than 10 years ago
- **>30,000 active users**
(includes external partners)
- Dedicated test automation toolchain with
> 2,000 automated tests per day
- **>12 AI based tools** used throughout the software
development lifecycle

UNTIL 2027 MORE THAN 40 MODELS WILL BENEFIT FROM NEUE KLASSE TECHNOLOGY CLUSTERS.

Launch of **NEUE KLASSE** with **BMW iX3**



2025

2026

2027

Digital **experience**:
Rollout to **40 models** in **26 months**

← Backwards **compatibility**:
The first of the new era gets **all future updates**

NEUE KLASSE: DIGITAL EXPERIENCES MEET DIFFERENT CUSTOMER REQUIREMENTS. CHINA SOLUTION

Laney Zhang

Head of UI/UX experiences



BMW R&D FOOTPRINT IN CHINA DRIVES DIGITAL & ELECTRONIC INNOVATION IN OUR LEAD MARKET.

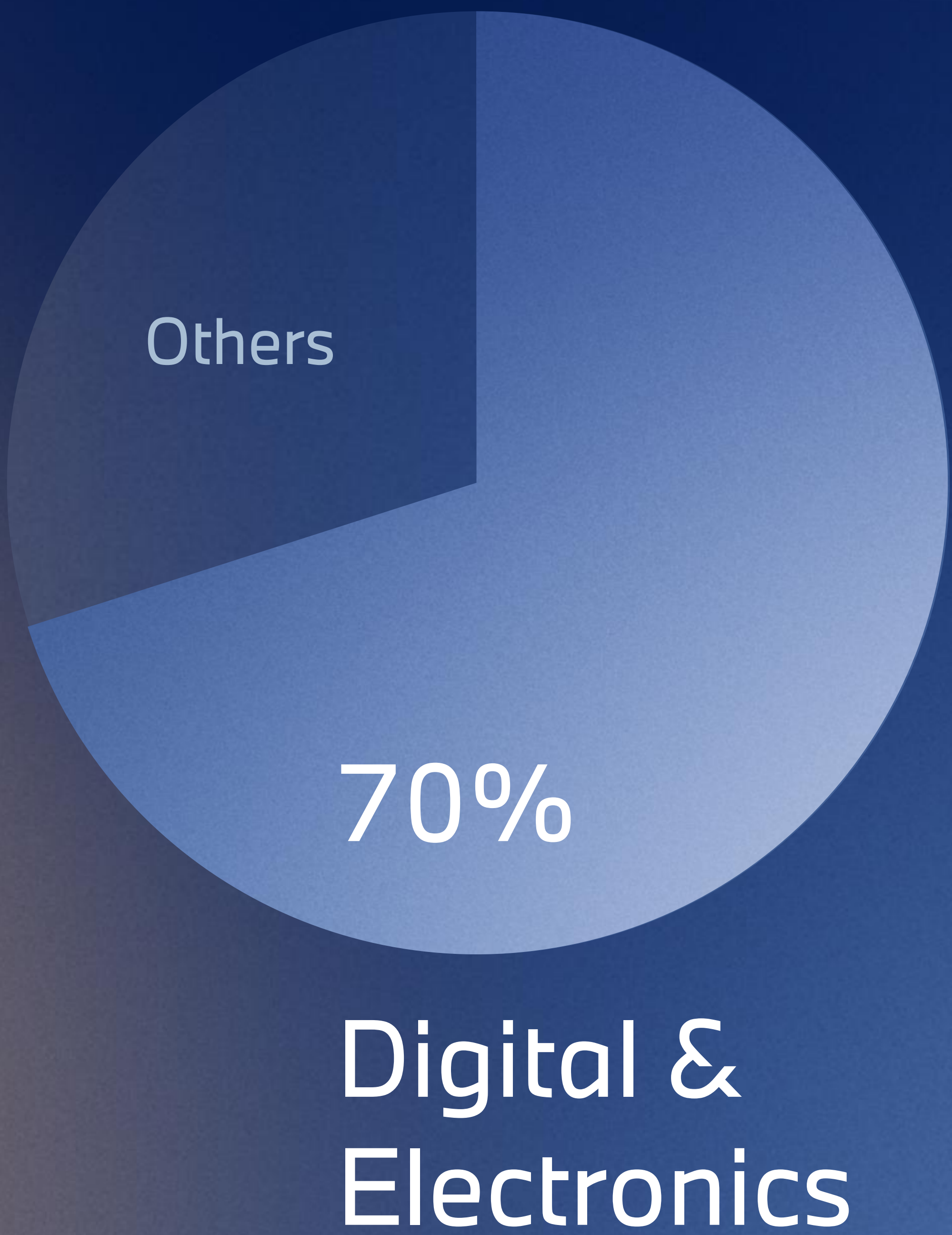
70% of our BMW R&D footprint China is in **digital** area.



We have **well balanced** allocation of digital expertise...



...& **High volume** of local **expertise** in all our sites.



Shenyang



Beijing



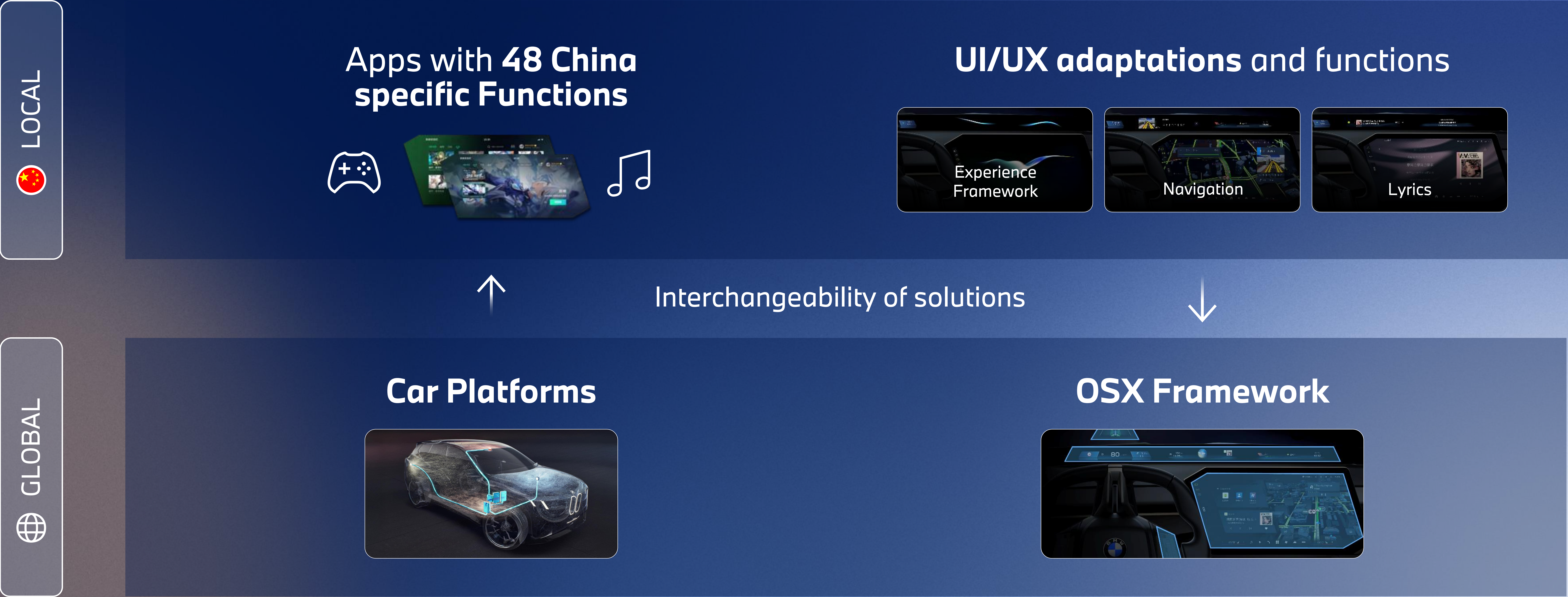
Nanjing



Shanghai



GLOBAL ARCHITECTURE ENSURES THE BASIS FOR CHINA UI/UX & APPLICATIONS.



DEEP INTEGRATION WITH CHINA MAJOR DIGITAL PLAYERS TO ENRICH ECOSYSTEM EXPERIENCE.

