

LF EDGE

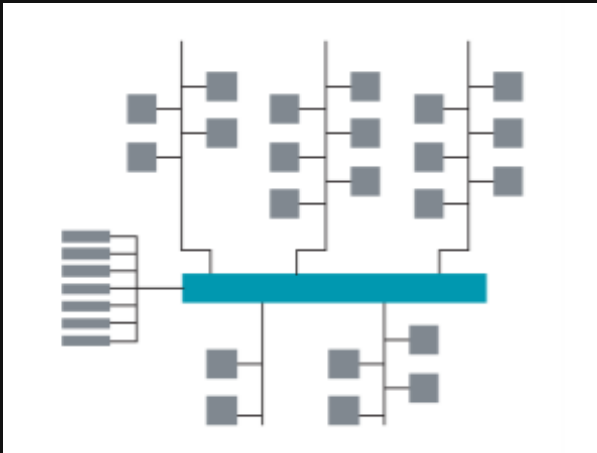
The trend, key technologies and scenarios of VICS

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Intelligentization and networking promote the evolution of vehicle electronic and electrical architecture

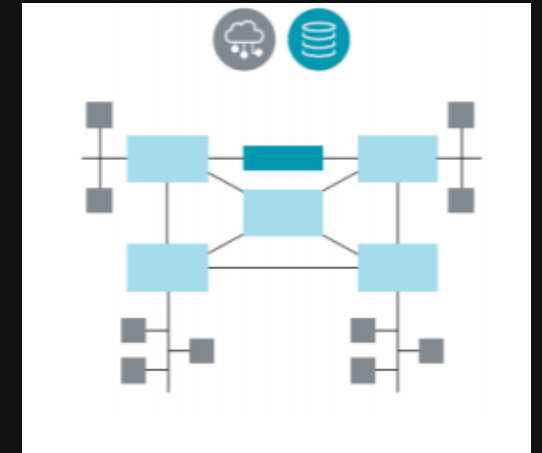
Distribute E/E architecture
(Today)



Domain centralized E/E
architecture
(2021-2025)

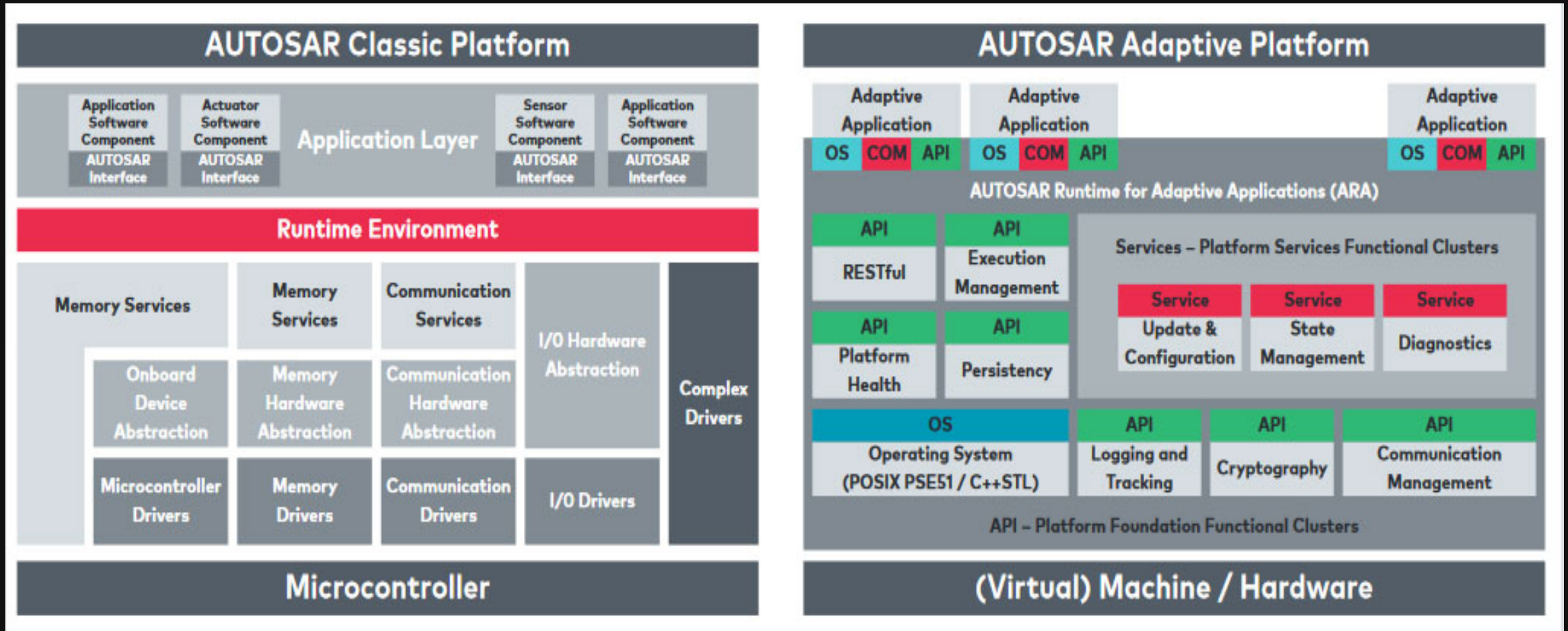


Vehicle centralized E/E
architecture
(Future)

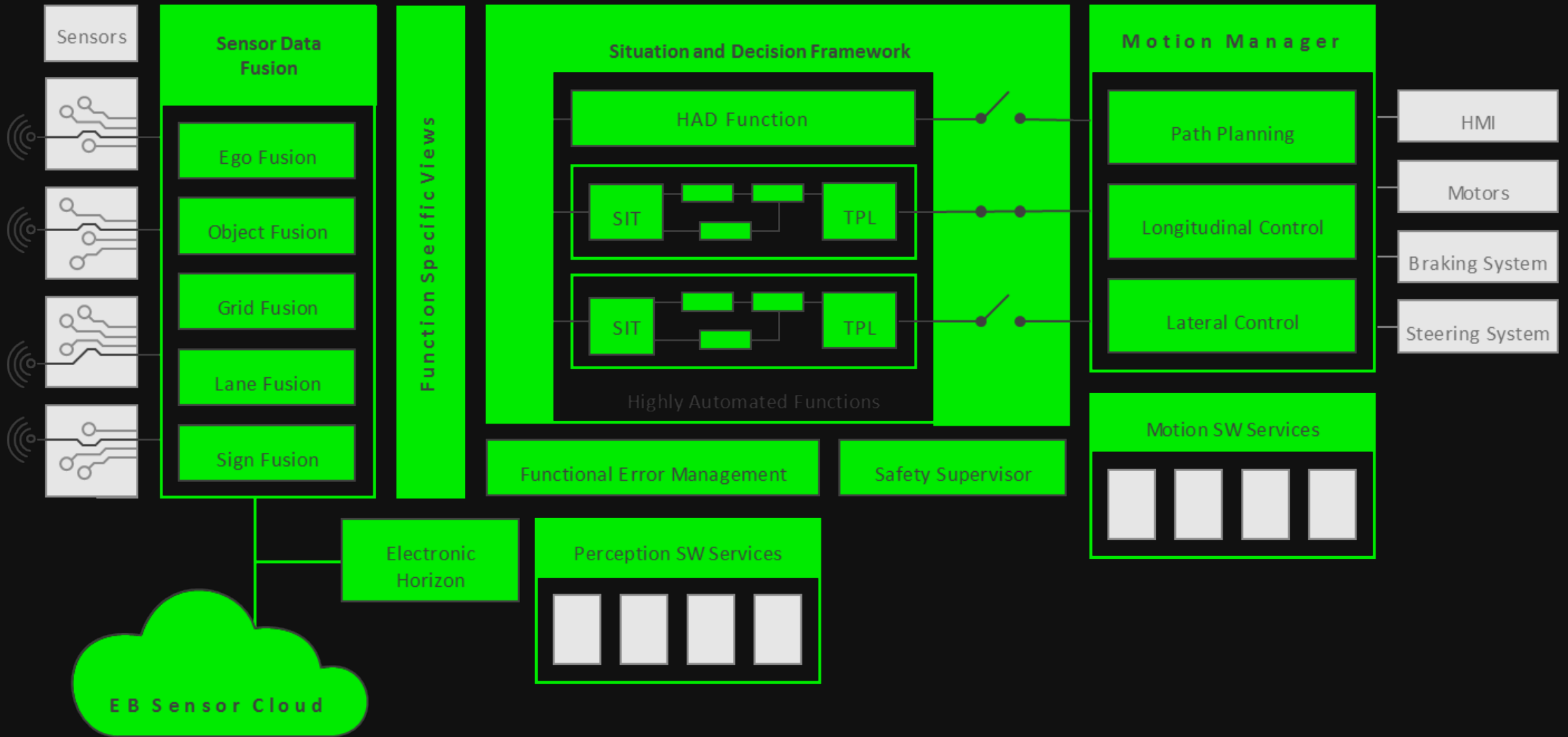


Central Gateway Domain control unit(DCU) Electronic Control Unit(ECU)

Adaptive Platform Autosar(AP) and Classic Platform Autosar(CP) architecture comparison



EB Reference architecture for HAD



Infrastructure required for Intelligent vehicle-infrastructure cooperation systems(I-VICS)

- Road: Informatization, intelligence and standardization
- Communication: Unified communication interface and protocol, coordinated vehicle-road interconnection
- Network: Car wireless communication network, narrowband Internet of Things
- Services: High-precision time-space reference services, vehicle emergency systems, rapid assisted positioning services
- Maps: basic maps and geographic information systems
- Data: big data cloud platform, software

Safety Of The Intended Functionality (SOTIF) and I-VICS

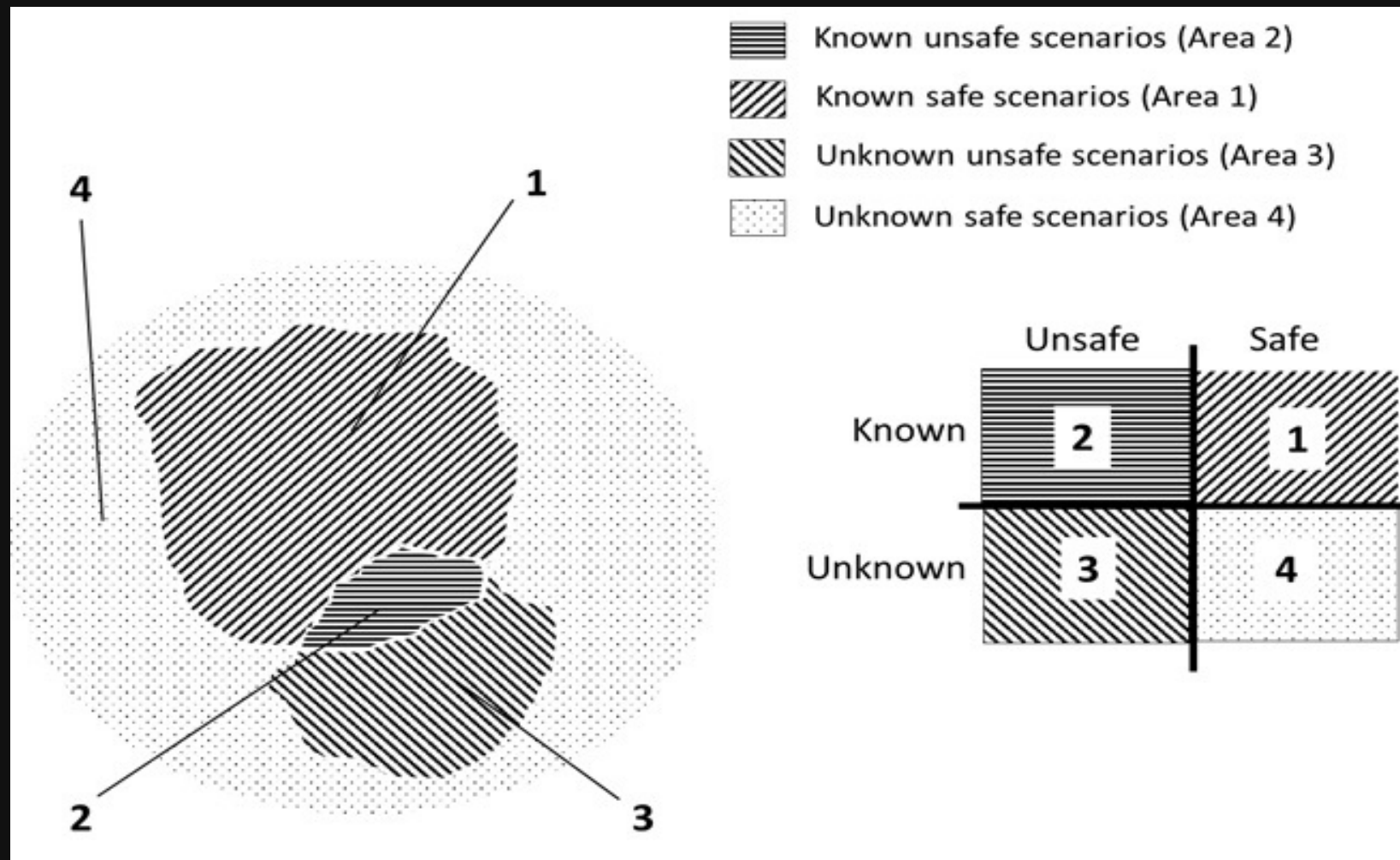
SOTIF(ISO/PAS 21448) emphasizes to avoid unreasonable risks due to expected **functional performance limitations**.

The background of the birth of SOTIF is the development of intelligent driving

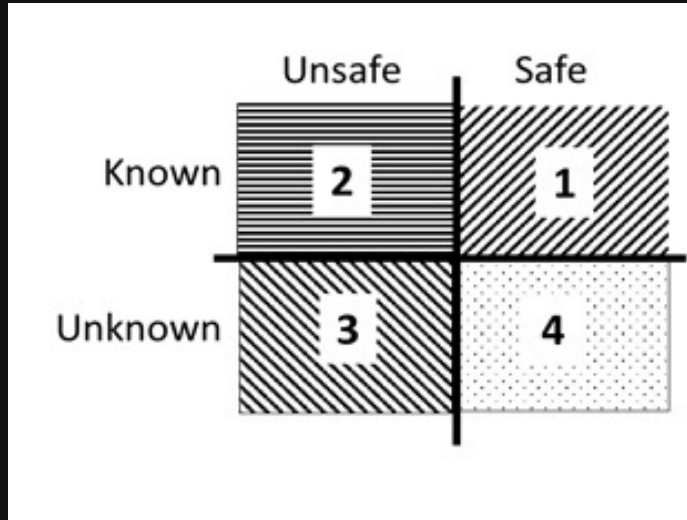
If classified according to the functional chain of intelligent driving: perception-decision-execution, the "**functional performance limitation**" is reflected in three aspects:

- Sensor perception limitations lead to scene recognition errors (including missed recognition of driver misoperation)
- Insufficient deep learning causes the decision algorithm to judge the scene incorrectly (including the wrong response to the driver's misoperation)
- Actuator function limitations lead to deviation from the ideal target

Safety Of The Intended Functionality (SOTIF) and I-VICS



Safety Of The Intended Functionality (SOTIF) and I-VICS



- For Area2 (known unsafe scenarios), the basic idea of SOTIF is to identify risk scenarios through safety analysis, and develop countermeasures against risk scenarios.
- For Area3 (unknown unsafe scenarios), various scenarios that a car may encounter under various road conditions need to be identified (in theory) in the early stage of development



Autonomous driving application scenarios

Recent



Provide robo-taxi services to the public based on autonomous driving technology



Unmanned terminal delivery for express delivery, takeaway, etc.



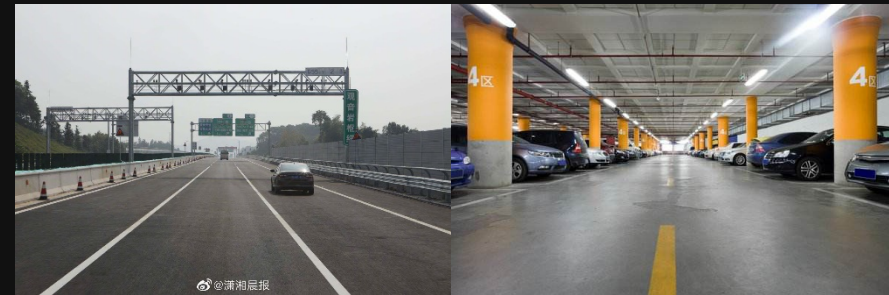
Short-distance connection service and logistics in semi-enclosed parks and factories



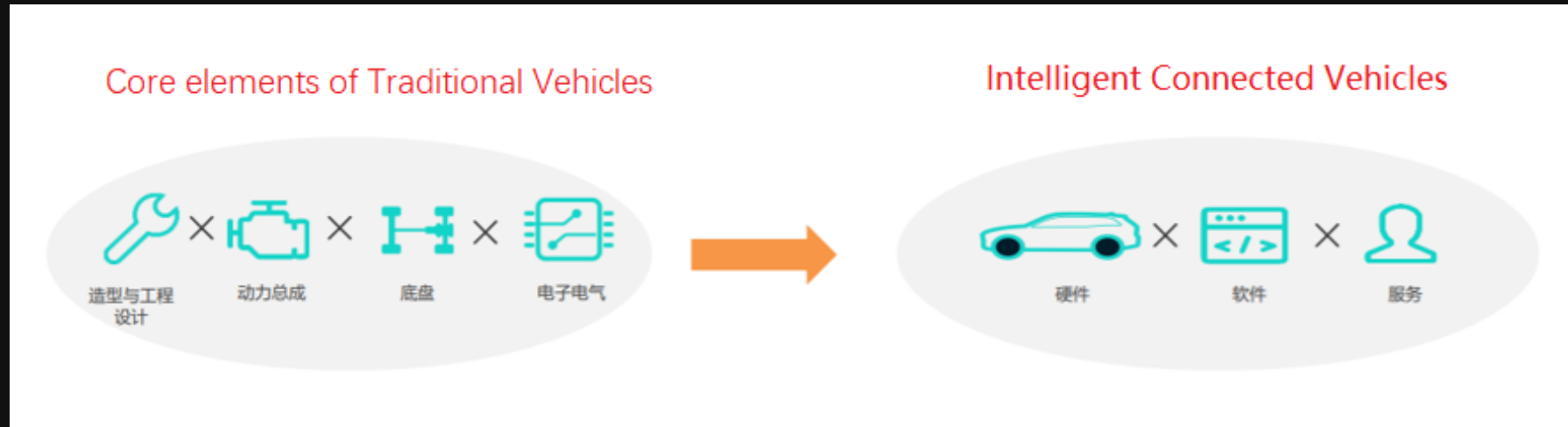
Provide container transportation services based on self-driving trucks, mainly for transportation between quay cranes and container yards

Future

Autonomous driving application scenarios based on safety and efficiency



The supply chain ecosystem is reformed and the elements of competition are changing



- Modeling and engineering design
- Powertrain
- Chassis
- Electronic and electrical

- Hardware
- Software
- Service



THANKS

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