



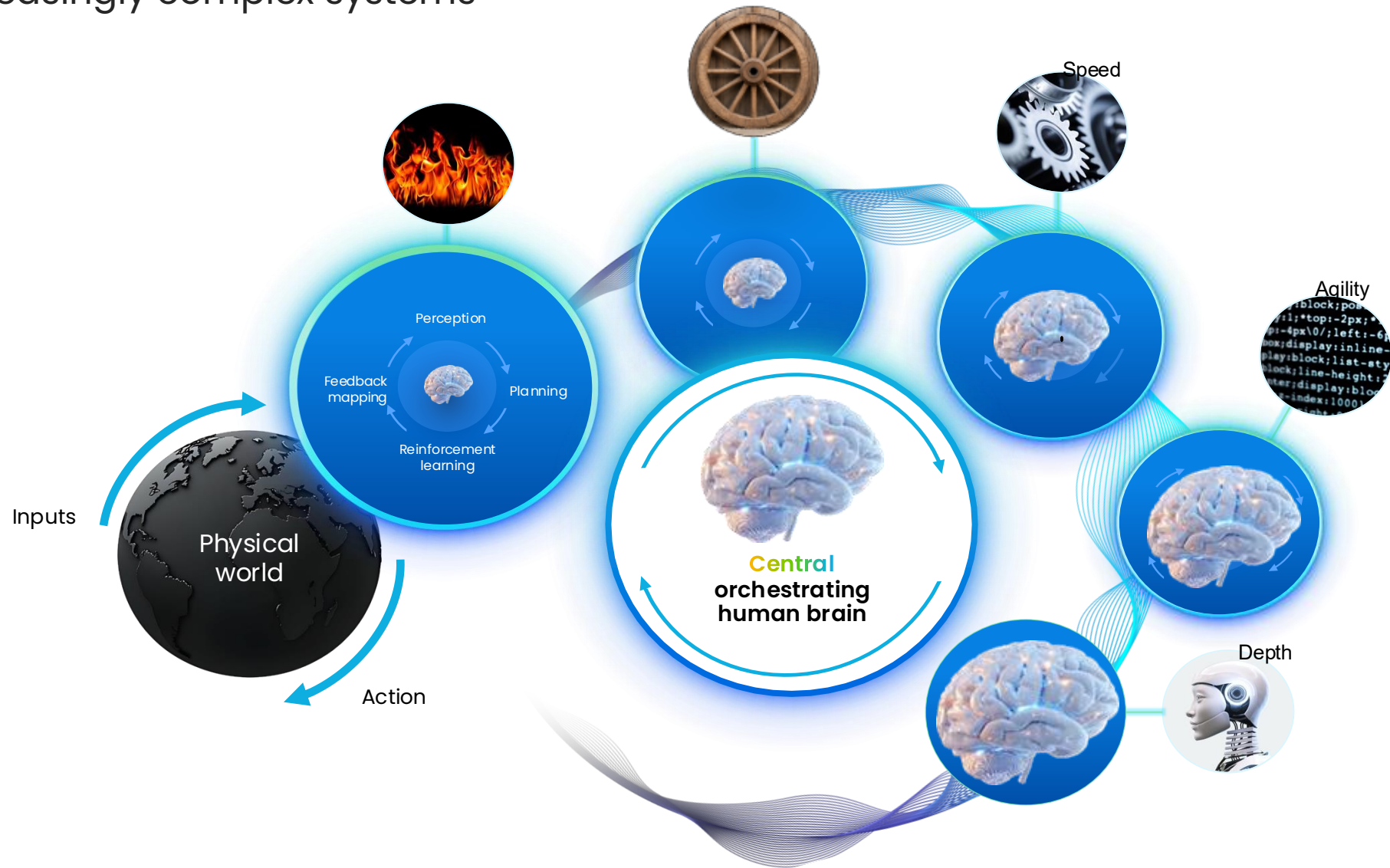
IPCEI Microelectronics and
Communication Technologies

The role of vehicle context in the AI-defined vehicles

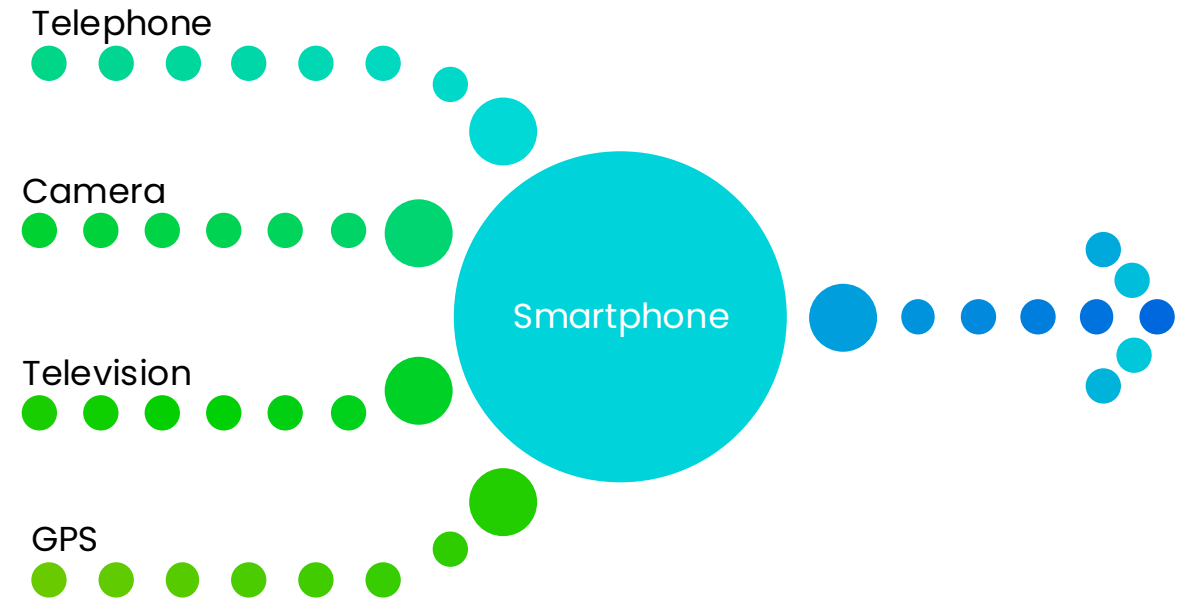
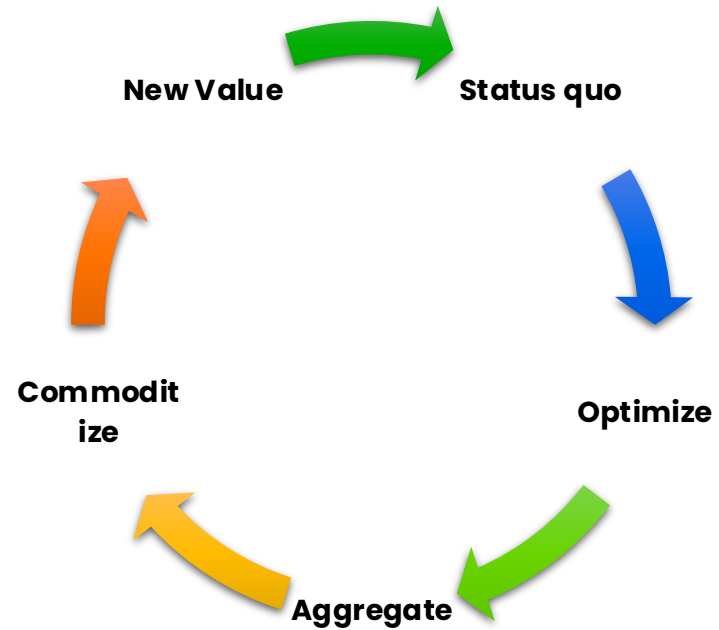
**Nicola Concer – Head of Product Marketing
NXP Automotive Processors**

Innovation builds on innovation

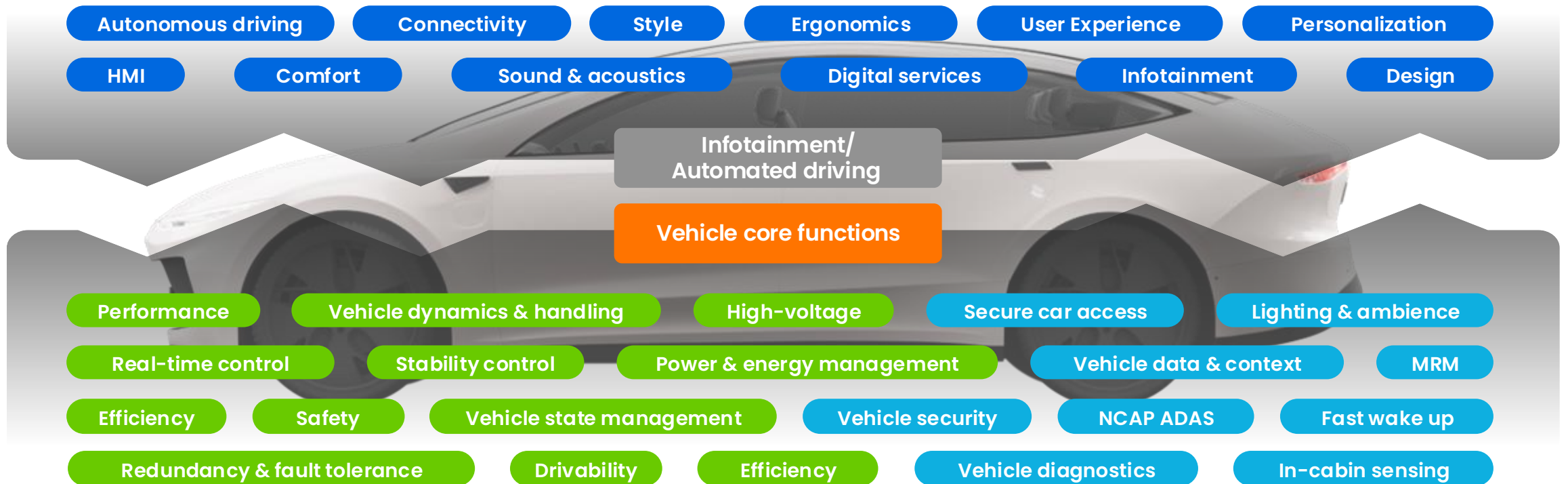
To solve ever increasingly complex systems



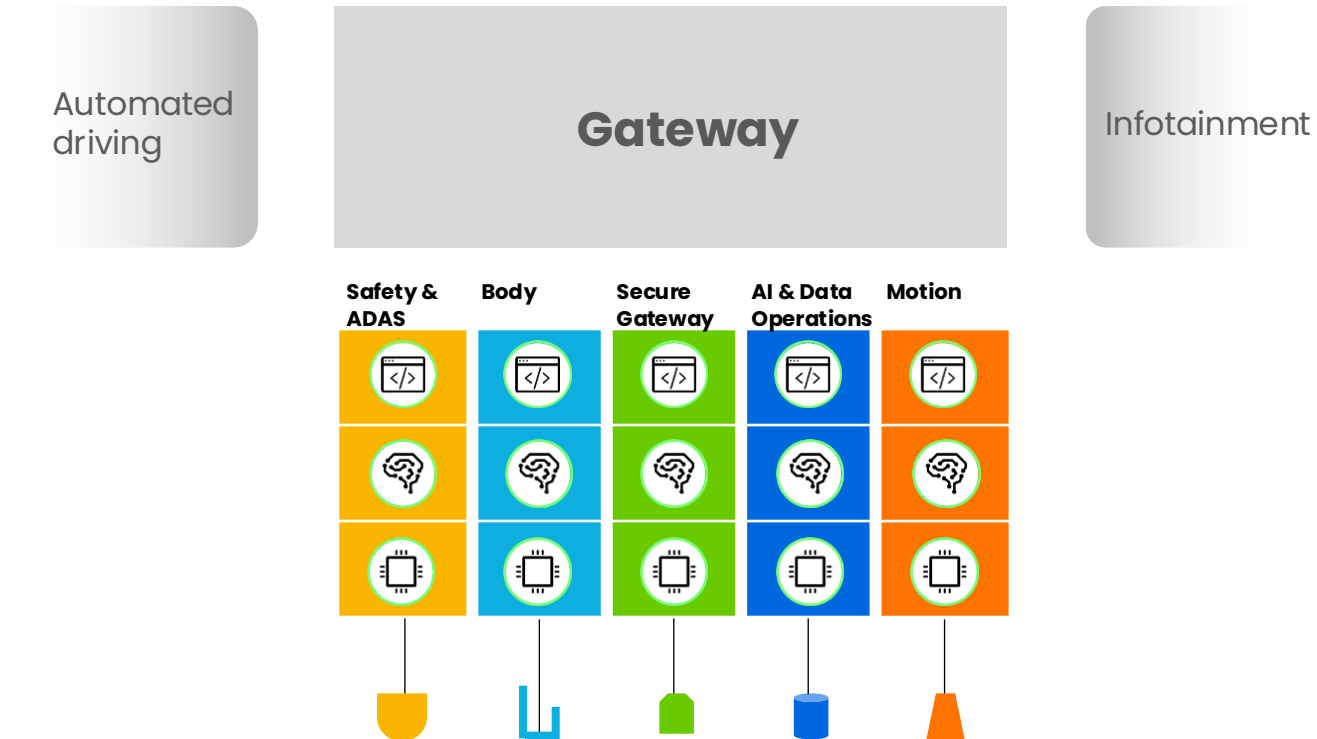
The uncomfortable 4-step innovation cycle



Innovation starts with a unified vehicle context



Hardware-defined vehicle: E/E architecture



AI-Defined vehicle: E/E architecture



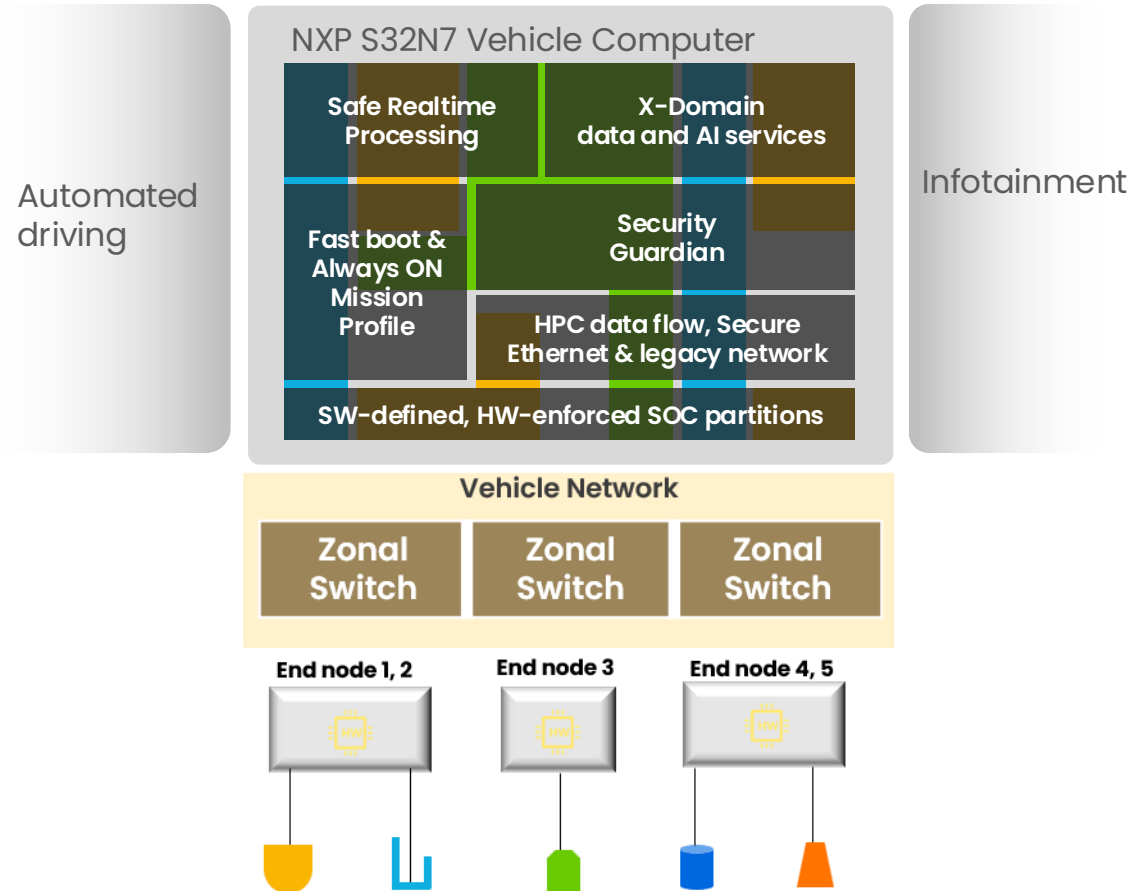
Consolidate up to **8 domains in one SOC**



Unified compute environment for all core functions



Lower total cost of ownership (TCO) by an estimated 20%



- + Compute headroom
- + Streamline architectures
- + **Vehicle context**
- ECU number
- Wiring harness
- Integration complexity

Vehicle context: real-time global understanding of the status of the vehicle

S32N7 – the foundation of the digitalized vehicle core

Enabling intelligence towards AI

Automated driving

Intelligent vehicle compute with S32N7

Agentic AI

Safety & ADAS
Ai

Secure Gateway
Ai

Motion
Ai

Body
Ai

AI & Data Operations
Ai

Ai

Vehicle networking

Ai

Energy networking

Infotainment

Non-generative AI Ai

AI operations



Agentic AI



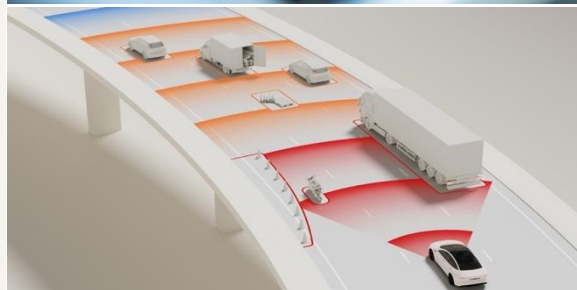
AI expansion



AI Expansion e.g. NXP Ara accelerator

AI extends across the vehicle at the edge

Augmented efficiency,
productivity and
resilience



Virtual sensors

Replace hardware sensors or deploy in previously inaccessible places like inside motors

Predictive maintenance

Utilize real-time data from individual vehicles to prevent anomalies in your fleet

Imaging radar

Radar-based object classification with reduced dependencies on cameras or LiDAR

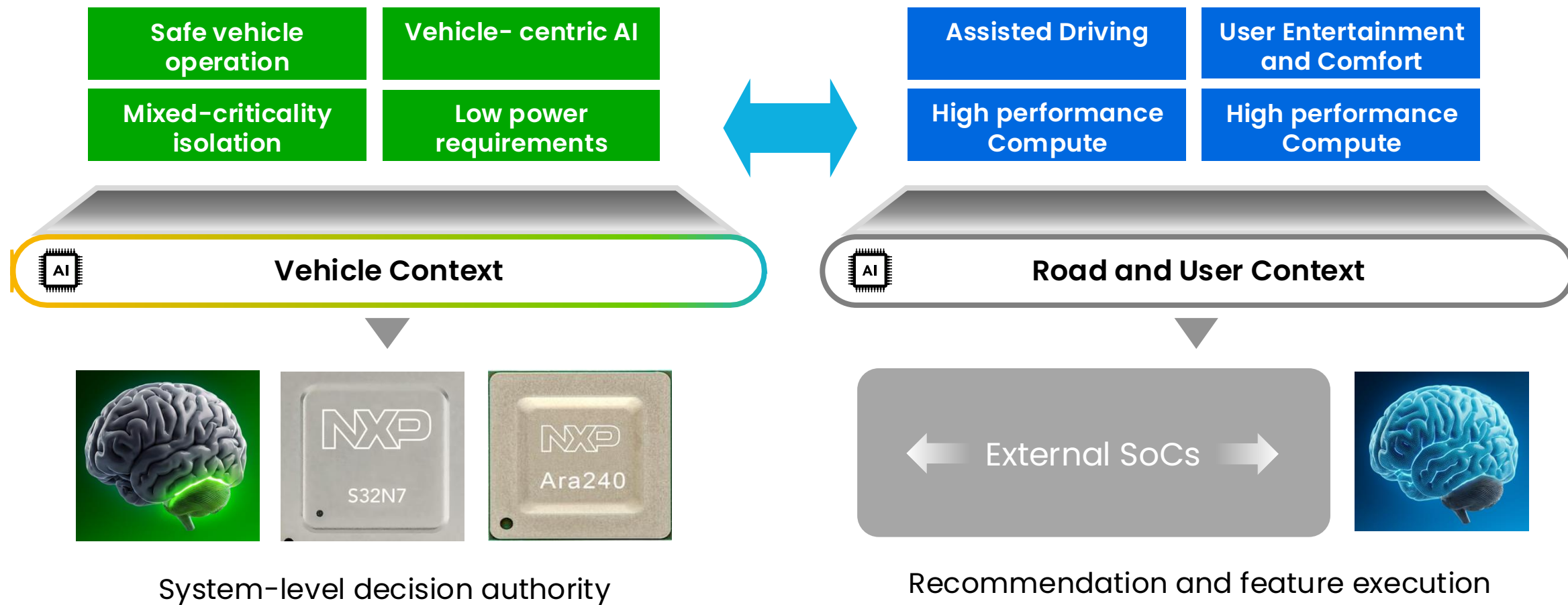
Audio

Identify emergency vehicle sirens in a noisy environment and localization of siren sound for ADAS

Battery & Energy Management

State of health, state of charge, Impedance monitoring and arch detection load behavior

Agent Separation for AI-defined Vehicles



A day in a life of an AI-defined vehicle



S32N7 super-integration processor: demonstrations

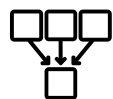
Agentic AI Vehicle Orchestration for Trip-Ready EVs



Intelligent Vehicle Architectures



S32N7: elevating the vehicle core functions for the next innovation step



Aggregate

Technology evolves by aggregating fragmented systems and abstracting their complexity.



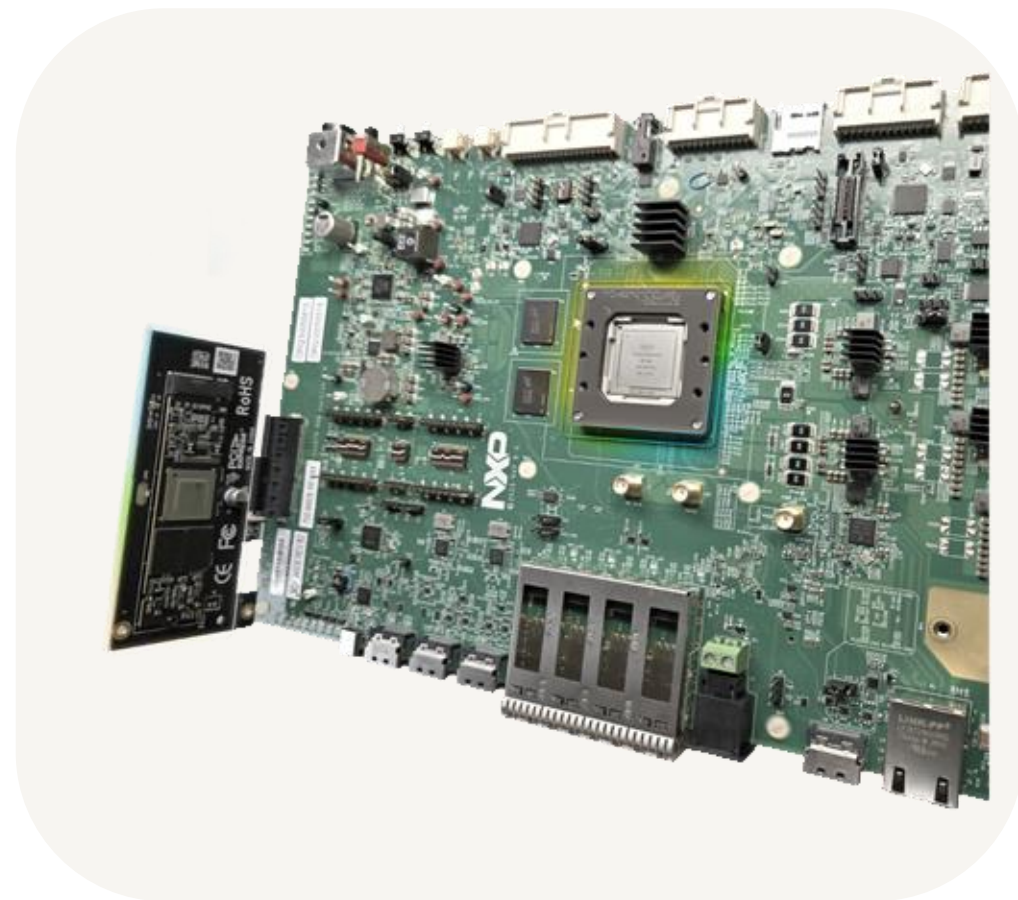
Elevate

S32N7 does this for the vehicle core: it consolidates core functions, elevates them into a unified vehicle context, and enables AI to act on real-time vehicle understanding.



Activate

The result: AI for the vehicle — safe, local, OEM-controlled, and available today.



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