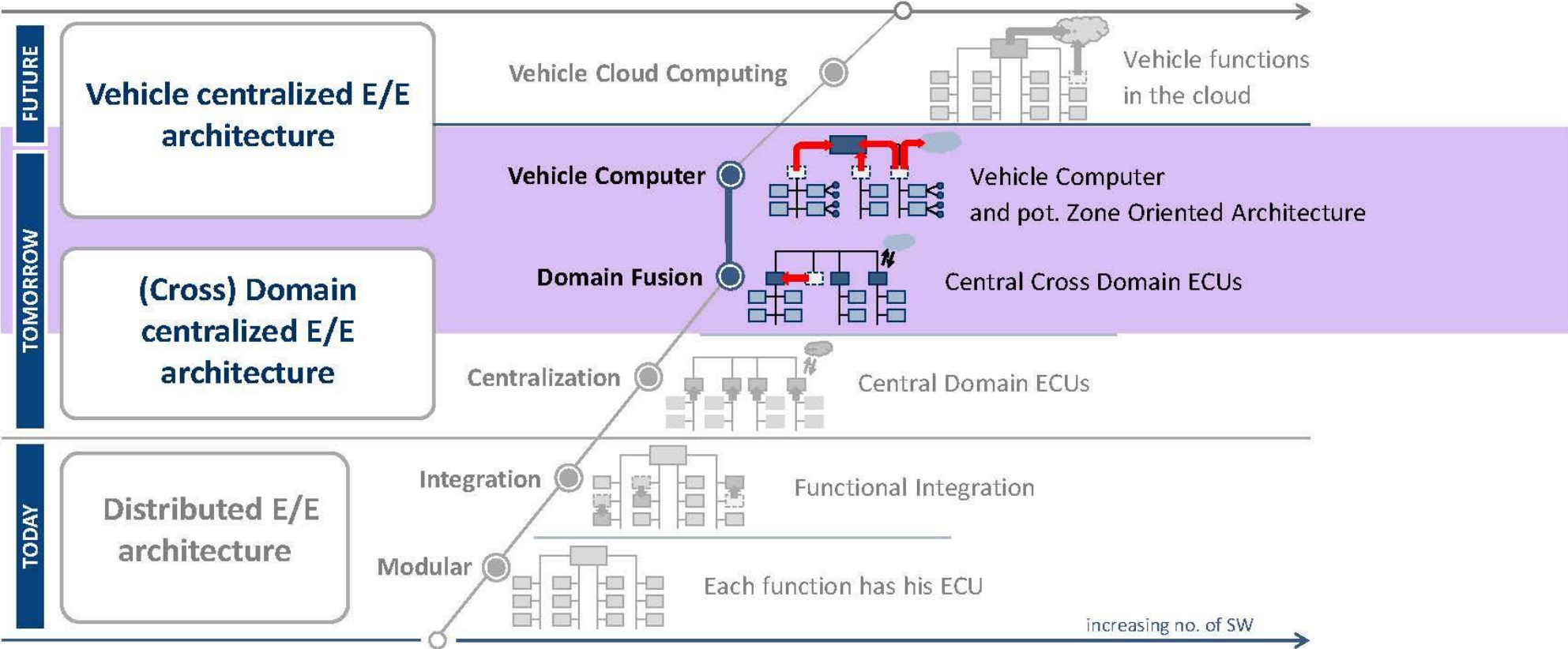# Future Vehicle EE and Software Architecture
(GENIVI 2018+)
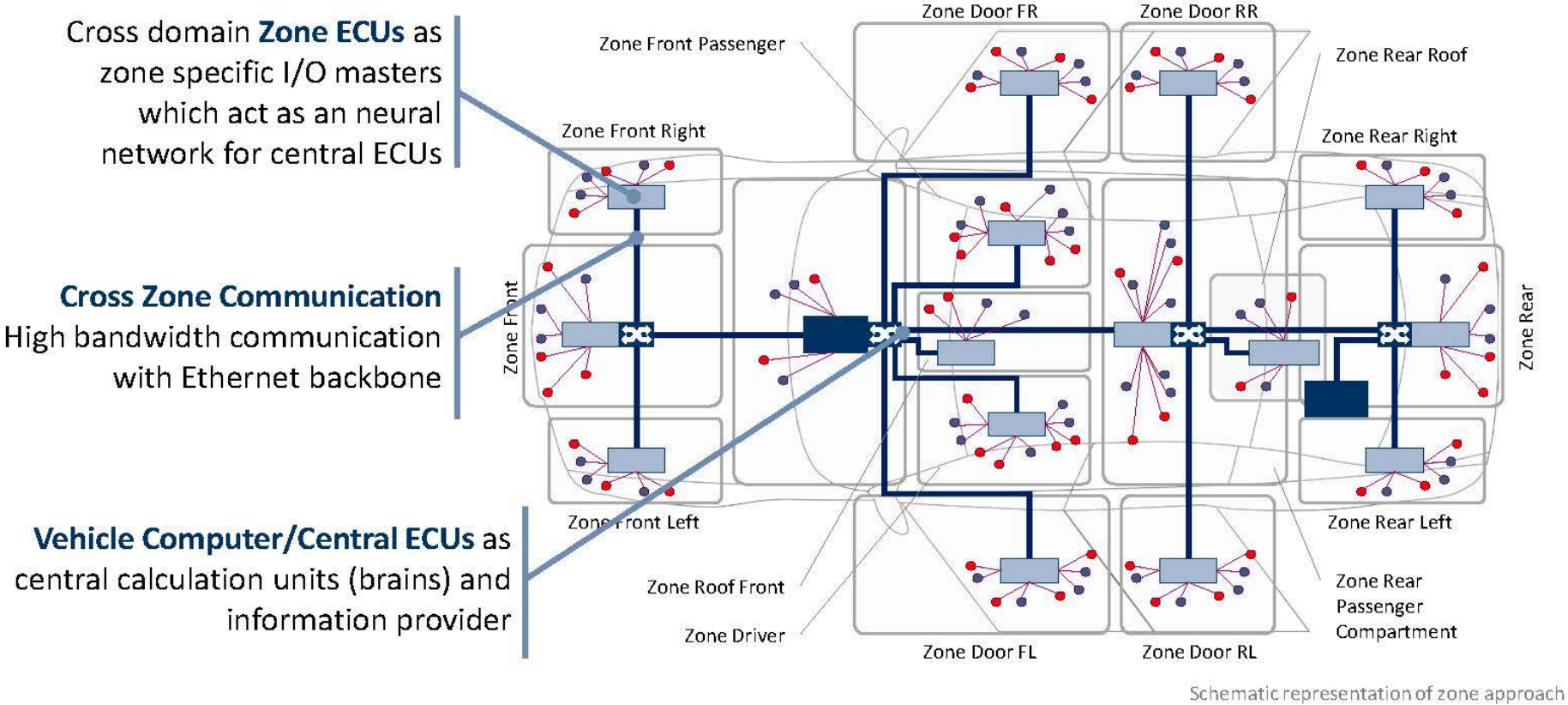

Roadmap E/E architecture

Up to now

Future Vehicle EE and Software Architecture

Vehicle centralized E/E architecture
Derived Concept

Cross domain **Zone ECUs** as zone specific I/O masters which act as an neural network for central ECUs

Cross Zone Communication
High bandwidth communication with Ethernet backbone

Vehicle Computer/Central ECUs as central calculation units (brains) and information provider

Zone Front Passenger
Zone Front Right
Zone Front
Zone Front Left
Zone Roof Front
Zone Driver
Zone Door FL
Zone Door FR
Zone Door RR
Zone Rear Roof
Zone Rear Right
Zone Rear
Zone Rear Left
Zone Rear Passenger Compartment
Zone Door RL

Schematic representation of zone approach

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Future Vehicle EE and Software Architecture

E/E Architecture is changing to centralization

In-vehicle network config evolution

| Now | 2021~ | 2023~ |

Central Gateway Modular Architecture

In-vehicle Server Domain Architecture

In-vehicle Server Zone Architecture

HW Centralization

SW Centralization

Comm. Module — Connected Gateway — DCU — ADAS

Comm. Module — Connected Gateway & Application Server — DCU — DCU — Zone — ADAS — IVI

- Large number of ECUs
- Secure communication
- CAN FD communication
- (CAN Matrix)

- Introduction of Domain Controller Units (DCU)
- Reduced number of ECUS
- Centralized high-speed ethernet communication
- Over-the-air update capability
- Secure gateway to the cloud

- Gigabit ethernet communication
- Software processing moving to zone server
- Higher integration for cost reduction
- Reduced harness weight

➔ Simple EV system configuration leads to the evolution of the vehicle network

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