Panel Discussion at IEEE-SA E&IP@ATD 2022

Enhancing switch functionality with optimized hardware utilization

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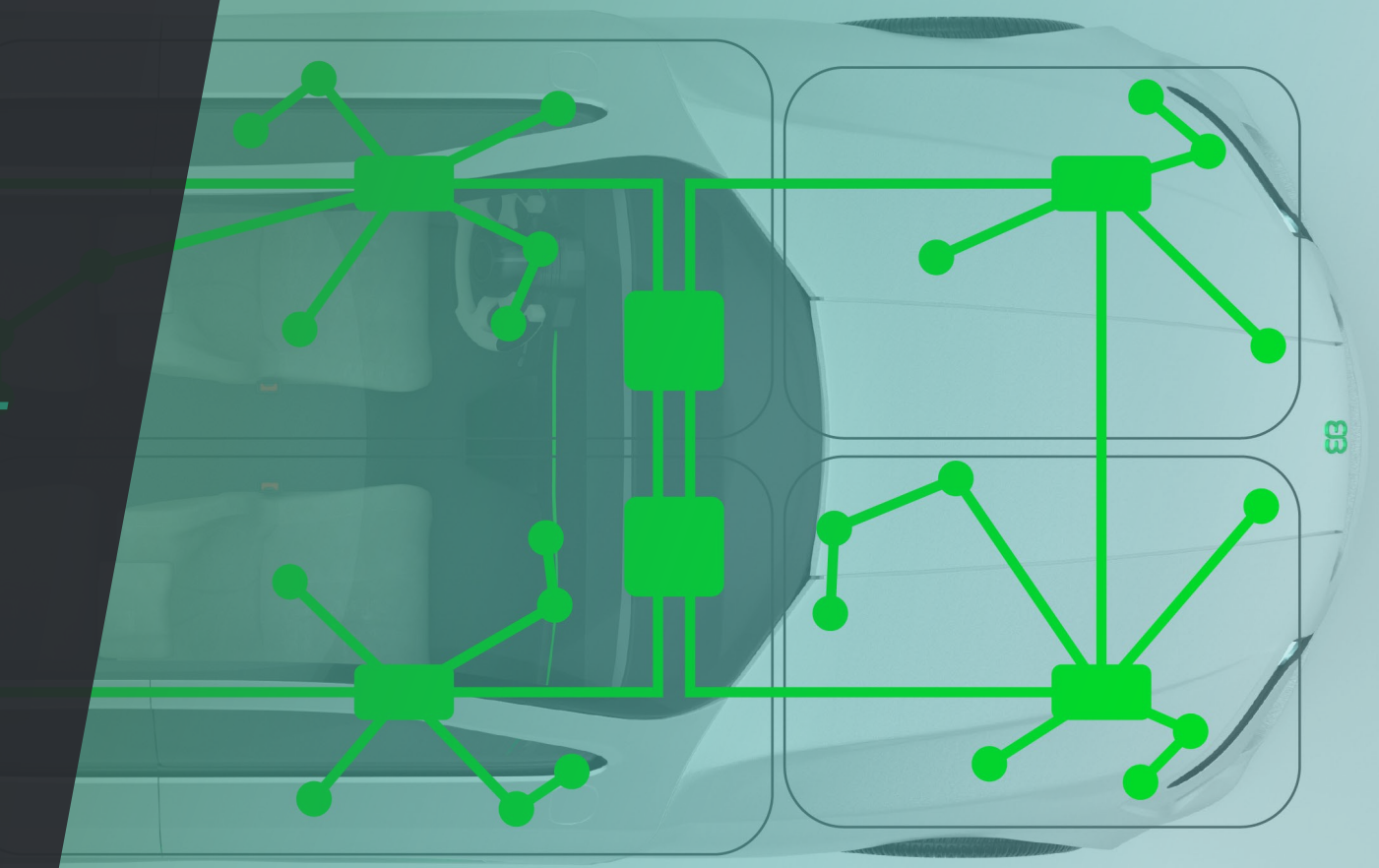
Roman Pallierer



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Illia Safiulin, Elektrobit

Short Bio

Illia Safiulin was born in Donetsk, Ukraine.

After receiving his Master's in Telecommunications from Technical University of Vienna, he started his professional carrier in industry as a project engineer in aerospace department of TTTech, dealing with safety and reliability of the avionics components. He has developed his carrier to the position of Product Manager Aerospace.

Currently he is working as a Product Manager in Elektrobit, leading the EB zoneo product line, dedicated to efficient solutions for in-vehicle networking.

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Importance of preparation

“By failing to prepare, you are preparing to fail”

Benjamin Franklin

- Technology is moving forward exponentially
- Number of functions and features growing exponentially as well
- We are at the stage where both SW and HW nearly reach its limits, thus finally a way closer collaboration needed
- The are already HW accelerators available; now it is time to connect it with smart and optimized SW

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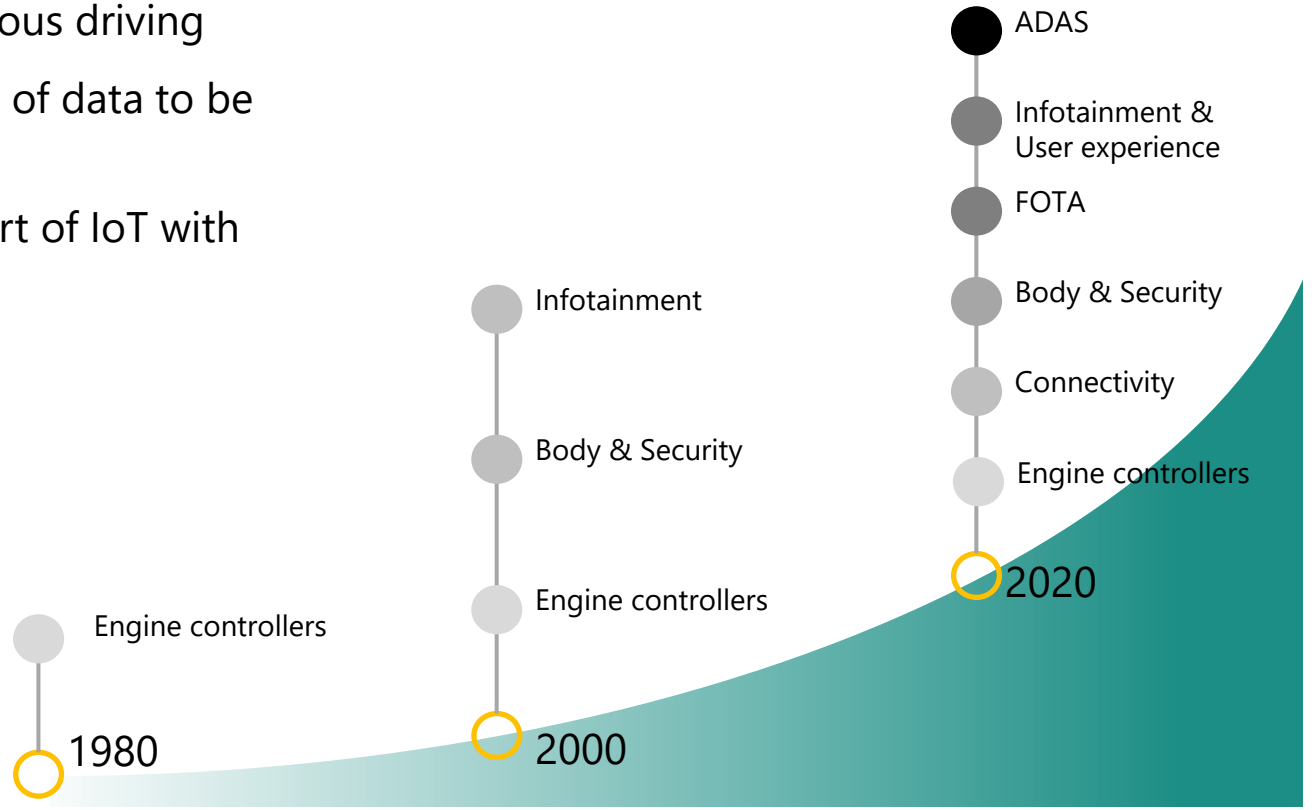
What is the state-of-the-art of SDV?

Where we are now?

Today, the most wanted features from consumers are:

- driver assistance features towards fully autonomous driving
- infotainment innovations with increased amount of data to be managed
- intelligent connectivity solutions, becoming a part of IoT with associated OTA/FOTA updates



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What makes it software defined?

Example: Dashboards

Hardware based Dashboard

Optimized (hardware) display for specific functionality

Domain-specific information is used in one display

New functional displays need a change of the hardware (re-design)

SW functionality extended

Software based Dashboard

Generic (software) display for any functionality (speed, speed limits..)

Cross-domain information used in one display

New functionality easily possible with software updates

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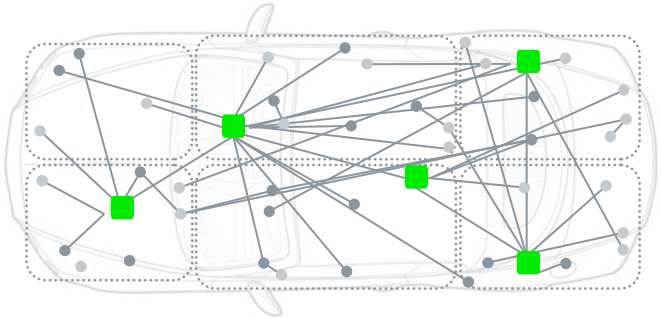
Automotive E/E architecture change for SDVs

Zonal nodes as key components for SDVs

Domain architecture

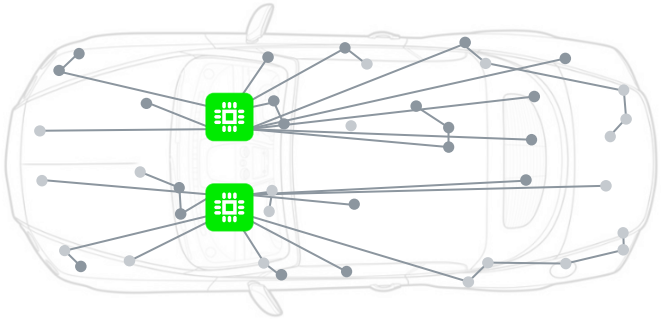


ECUs connected to their domain controllers

Domain controller

Domain Sensor / Actuator

Centralized architectures / 1-zone

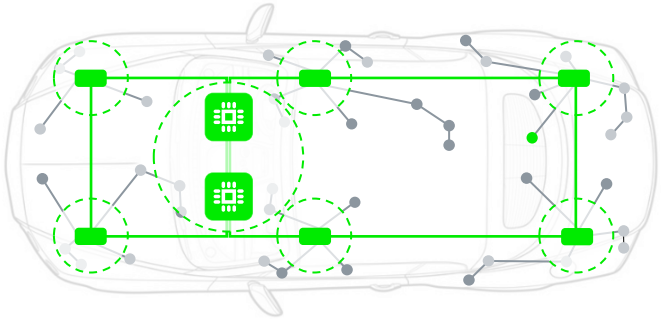


ECUs connected to central HPC (domain-independent)

HPC / Server ECU

Sensor / Actuator ECU

Zonal architecture / n-zones



ECUs connected to next zonal ECUs with backbone to HPC (domain-independent)

HPC / Server ECU

Sensor / Actuator ECU

Zonal ECU

Zonal ECUs

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