New architecture approaches and their impact on automotive wiring harness

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Abstract
Electric mobility and digitalization are the pacesetters in the Volkswagen Group. Software competencies and handling of software complexity are already game changers in the automotive development process. To institutionalize this competencies the CARIAD SE was founded in 2020 as new brand in Volkswagen Group.

The main goals are the development of a uniform software platform for all brands in the Volkswagen Group and the development of a consistent E2E architecture that can be used all over the Volkswagen Group in a scalable manner.

This consequently leads to a new approach for designing the E2E wiring harness architecture.

The wiring harness at Volkswagen Group as the backbone of electronic vehicle architecture has grown from generation to generation. New customer functionalities brought new networking technologies but also additional wiring requirements with them. However, what has not changed over the years is the aim to have the most efficient harness onboard and not carrying one gram of copper to much in the cars because of the customer specific wiring harness (KSK).

This steady increase in new innovative vehicle functions and the resulting increase in the wiring harness is more challenging than ever before – especially when considering the impact on electrical range and the CO2-footprint.

The lecture takes you on a journey from the vision of the CARIAD SE for the future E2E architecture to the direct impact of architectural decisions on the wiring harness. It shows a new approach in designing the wiring harness architecture, considering electrical efficiency and manufacturing optimization.