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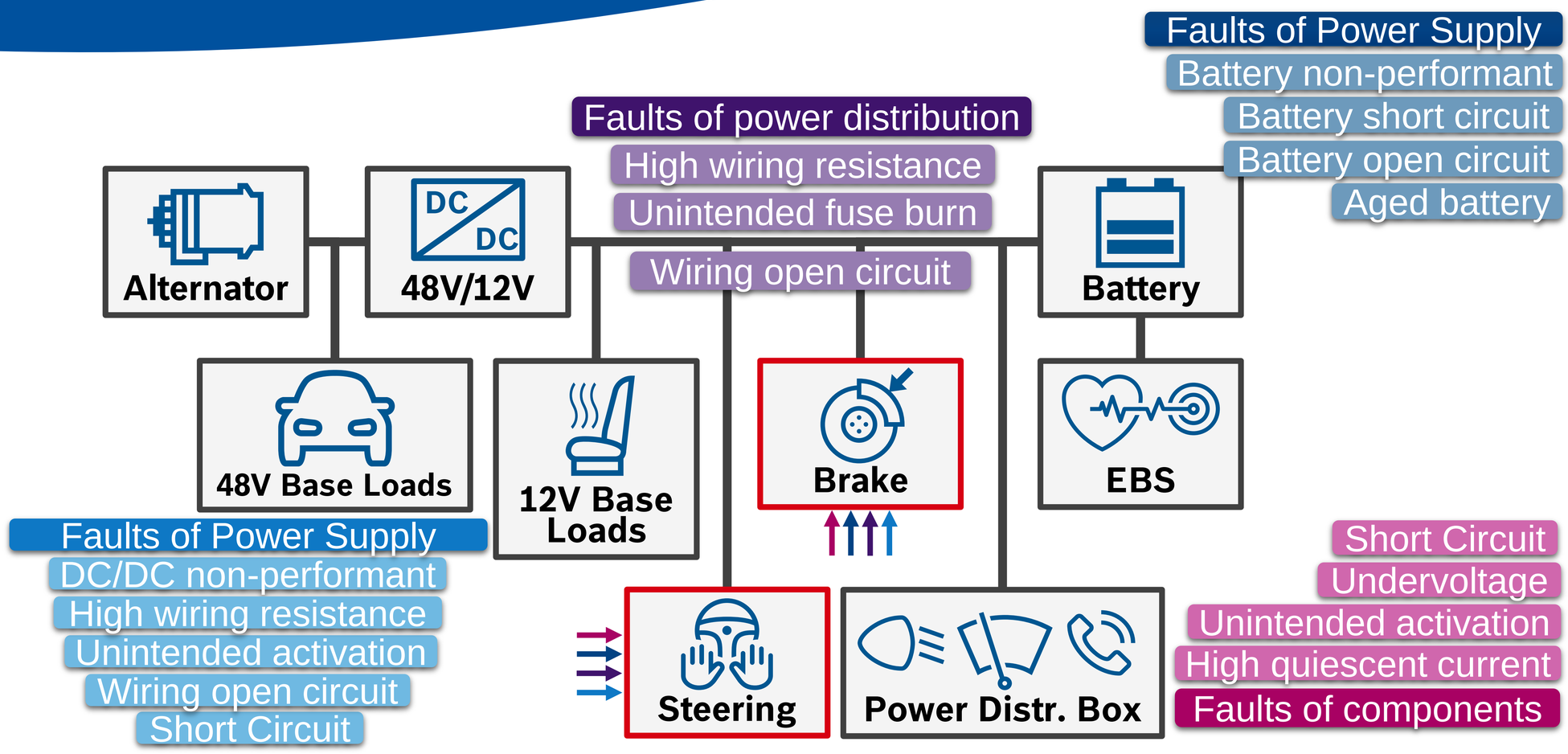
Functional safety in the field of powernet with a focus on technical safety mechanisms



How is automated driving (AD) changing the development process for electrical systems?

With AD functionality, vehicles must independently fulfill safety-critical driving functions (e.g. safe-stop scenarios). To do this, multi-sensor systems must plan trajectories together with computing units and execute them using electronic actuators (e.g. brakes, steering). Failures of a component function are likely to endanger people and the environment. The on-board power supply system (powernet) is the basis of the safe energy supply for the actuators. This is why the functional safety requirements for the on-board power supply systems are increasing enormously!

Why are state-of-the-art powernet systems not ISO 26262 compliant?

The development process of current powernet systems is limited to the analysis of voltage stability and energy balancing. For future vehicle functions in automated driving, additional legal provisions, technical standards (according to ISO 26262) and reliability must be considered. The requirements for functional safety in the on-board power supply system is explicitly stated.

Safe energy supply for safety-relevant consumers

Current research projects deal with the development of technical safety measures which should meet the required automotive safety integrity level (ASIL) of the energy supply system.

Universität Stuttgart
Institut für Maschinenelemente
www.ima.uni-stuttgart.de

armin.koehler@ima.uni-stuttgart.de
Institut für Maschinenelemente
Fachbereich: Zuverlässigkeitstechnik

Pfaffenwaldring 9, D-70569 Stuttgart, Germany