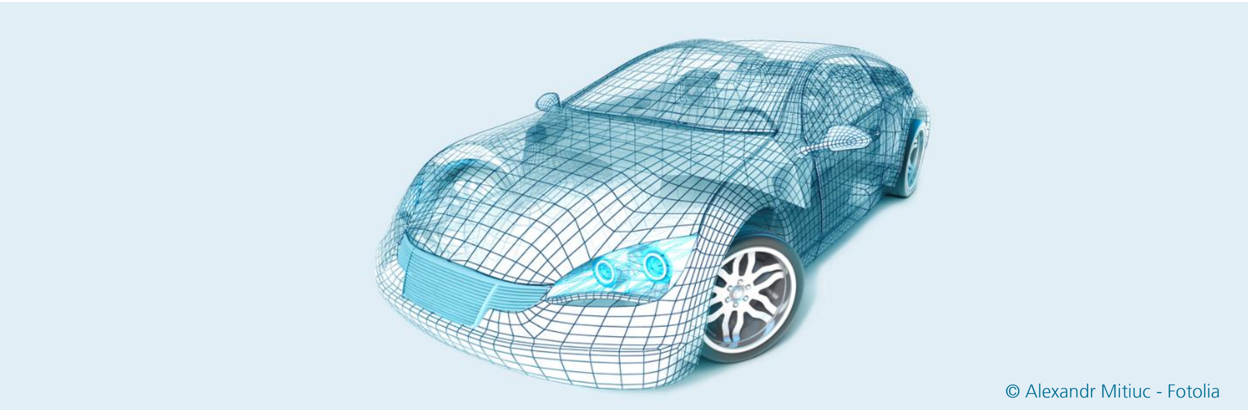
FRAUNHOFER INSTITUTE FOR INTEGRATED CIRCUITS IIS
DIVISION ENGINEERING OF ADAPTIVE SYSTEMS

AUTOMATED VEHICLE WIRING HARNESS FUSA-SIMULATION



Due to the ubiquity of ADAS and the further steps to autonomous driving, electric power supply in cars is developing more and more into a safety-critical feature. Since the mechanical components and the driver can no longer be a redundancy layer, supplying power to safety-critical items becomes safety-critical itself. Thus, the wiring harness also has to meet increased safety requirements.

But how to design a wiring harness capable of safely supplying power and how to proof that capability? A combination of testing and simulation including fault injection is needed. Usually these simulations are complex to implement and take a specialized team to accomplish. We developed a software solution that reduces the effort and cost needed for such a design and simulation campaign to a minimum – and no special modeling and simulation knowledge is required.

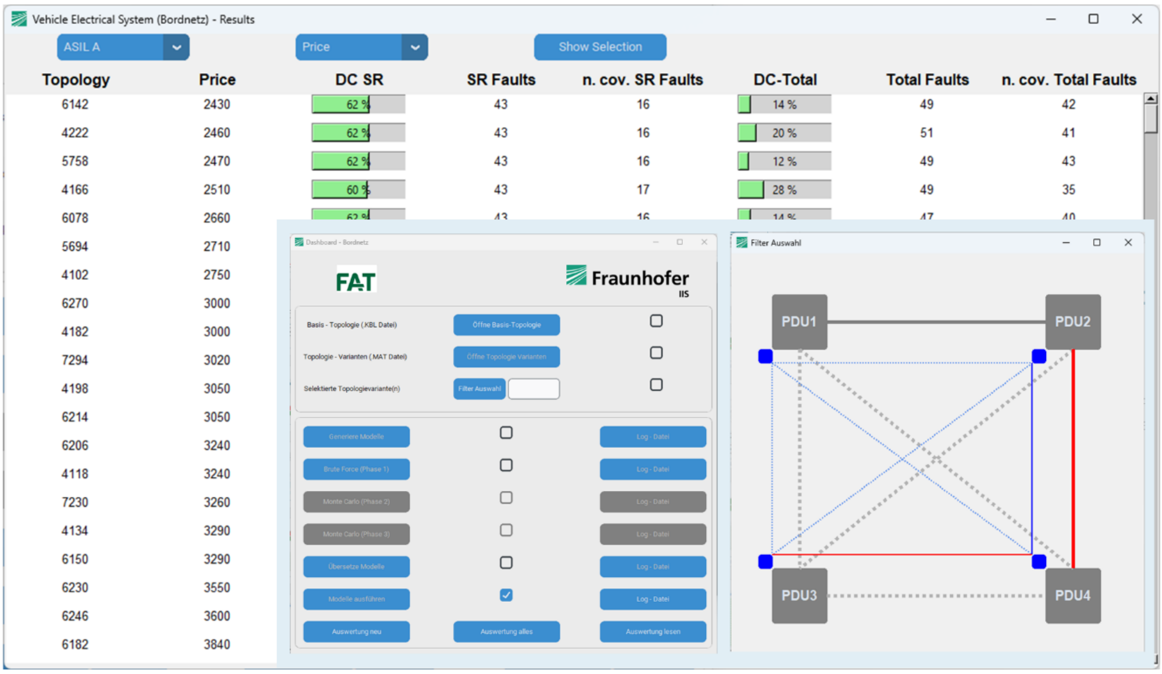
With our solution, you can let your wiring harness architects focus on what they are best at: building a functioning harness. Topology variations are automatically generated, modeled and simulated. Fault injection is used to determine the efficiency of safety mechanisms and the best possible topology variant is selected. You simply have to select your desired ASIL and sort by other criteria like cost or quality and get a list of the best possibilities.

Your benefits:

- Increased efficiency through pre-selection of wiring harness topologies to implement
- Shorter development cycle by checking FuSa compliance at first steps of development
- Meeting safety design goals by focusing on core competencies – no modeling or simulation knowledge required

Our solution

- Modeling and automated simulation of thousands of topology variations
- Fault injection simulations to determine diagnostic coverage of safety mechanism
- Automated generation and evaluation of results
- Topologies filtered by needed ASIL
- Topologies sorted by quality and cost



Dashboard, filter options and results of the vehicle electrical system FuSa simulation

About us

The Fraunhofer Institute for Integrated Circuits IIS is one of the world's leading research institutions for microelectronic and information technology systems and services. At the division Engineering of Adaptive Systems in Dresden, researchers are working on the efficient realization of intelligent systems. The goal is to ensure the swift, resource-efficient, error-free and safe development of electronic systems and to come up with new design concepts to meet the challenge of the constant miniaturization of semiconductor components and the growing complexity of integrated circuits. The work is focused on complex safety-critical electronics with high requirements regarding quality, robustness and reliability, which are applied in long-lasting, functionally safe products.

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