



Functional Safety of Electronic Systems with the safety standard IEC 61508

Four-day Workshop with optional qualification as
Functional **S**afety **C**ertified **E**ngineer **D**evelopment (FSCED)
including FMEDA Workbench Database Tool

We at TÜV NORD are pleased to announce, a four-day workshop session about the topic of Automotive Functional Safety and the IEC 61508 including the option of examination to become a qualified **F**unctional **S**afety **C**ertified **E**ngineer **D**evelopment (FSCED). The IEC 61508 standard describes management of Functional Safety as the essential basis for the development of safety-relevant electronics. Participants who greatly benefit from this workshop include:

- Product safety and safety management engineers.
- Development engineers engaged in the design and testing of software, hardware, and systems.
- Managers seeking a better understanding of functional safety with regards to electronic systems and the IEC 61508 standard.
- Quality management professionals responsible for IEC 61508 compliance.

Those attending Days 2 & 3 will also receive the **FMEDA-Workbench**, an excel-based database tool, developed exclusively by TÜV Nord for calculating failure rates and metrics in accordance with IEC 61508 part 2 by means of the reliability standards according to IEC 62380. The workshop will take in 86150 Augsburg. Space is limited to a total of 20 participants. Registration is open until the workshop is booked. To register, please fill in the attached form and return to Fax: +49 821 450954 4269 or register online on <http://www.tuev-nord.de/> by the registration deadline. If you have questions, call +49 821 450 954 4285 or email samoeller@tuev-nord.de.



Workshop Agenda

Day 1: Functional Safety Management (FSM)

FSM and concept development, from Risk analysis to the functional safety concept, using IEC 61508 standards

Considerations will be presented for implementing a Functional Safety Management (FSM) system, including tasks faced by both the responsible safety manager and safety coordinators. A general overview of the required processes, quality assurance system, complementary processes in development and extension of supporting processes will be shown. Its aim is to inform responsible persons and management in the development, test and quality departments to the implication of IEC 61508 to the company and its products and processes. A general introduction of the safety process is provided including documentation requirements and the management and technical activities during the overall safety life-cycle phases. The complete concept development phase, from the risk analysis to the functional safety concept, is presented in practical exercises. Illustrative examples are used to highlight the risk analysis with risk assessment, the item definition requirements and the derivation of functional safety requirements.

Day 2 and 3:

System Level and Hardware Level Implementation of IEC 61508

System development, technical safety concept, system and hardware development. Evaluation of Safety Goals and Hardware Architecture using Failure Mode Effect and Diagnostic Analysis (FMEDA)

This workshop addresses the technical concept design of a system and its elements. Knowledge of the relevant interactions is developed in-depth, using illustrations. In addition, the lecture describes safety-oriented hardware development processes including the architectural constraints, documentation requirements and development procedures on hardware safety integrity.

IEC 61508 presents an approach to hardware assessment and requires an evaluation of the residual risk of violating the safety function due to failure associated with hardware element single-point and residual faults. Under consideration of the FMEDA methodology, required safety demonstration methods and the calculation of the PFD, PFH value and SFF are presented. In this analysis, coverage of safety mechanisms is considered. The workshop provides a unique FMEDA-Workbench database tool developed exclusively by TÜV NORD. The tool has a build in database for FIT-rates and failure distribution according the reliability standard IEC 62380. A laptop with Microsoft Excel is required.



Day 4:

Software Level Implementation of IEC 61508

Safety Oriented Software Development

Beyond the demands of previously existing software quality standards IEC 61508 establishes further software-related requirements focused on Functional Safety. The workshop presents the additional demands including the relevant techniques and measures corresponding to the relevant SIL made on software development and their practical implementation in an illustrative manner. It is a briefing for all SW oriented personnel including those dealing with the validation of tools. Beginning with the management process for safety software development, a concrete example to the necessary requirement specification will be worked out. Techniques and measure for safety software development and use of support tools (tool qualification). Each of the SW development phases will be discussed including specific requirements for implementation and testing. Validation activities and documentation features will be explained in detail according to the IEC 61508.

Day 5:

Qualification Exam for Functional Safety Certified Engineer Development (FSCED)

Participants who want to have a proof of their skills are able to take the FSCED qualification test. Attendance of all 4 workshops is a prerequisite. After successful completion of the test, TÜV NORD will provide FSCED certification. The qualification is valid for 3 years and can be extended another three years after attending a follow-up workshop including a test. Further certification as a Functional Safety Certified Coordinator Development (FSCCD) and afterwards as a Functional Safety Certified Manager Development (FSCMD) can be achieved by individuals demonstrating work on relevant safety projects for at least the past 2, respectively 4 years and by successful completion of a qualification audit by TÜV NORD. For more information, please refer to our flyer „Personal Certification“.