Automotive ISO 26262: Functional Safety Adaptation and Integration

Driving functional safety in parallel with automotive innovation, minimizing subjectivity, and strategizing in greater detail

Key Learning Benefits:
- Discuss new developments and transformation, practices for the advancement.
- Learn automotive ISO 26262 leading with inclusion method, inspiring software users and work culture between peers.
- Explore the integration of designing system to ensure full safety process execution.
- Inspect the future, new innovation, priority and new roles.
- Discover the frame work of re-use of safety functions, different safety concepts
- Recognize the best technique to test failures, different methods of fault analysis.

Invited Speakers:

Manfred Schoelzke
GME Vehicle System Safety
Adam Opel AG

Dr. ir. Jean-Claude Habumuremyi
Demonstrator Program Manager
Functional Safety and Dependability
Plastic Omnium Auto Inergy

Dr.-Ing. Daniel Kästner
Chief Technical Officer
AbsInt Angewandte Informatik GmbH

Emrah Eminoğlu
Global Functional Safety Manager
Magna Powertrain / Magna International

Nermina Gradisic
Product Marketing Manager
Car Infrastructure
Elektrobit Automotive GmbH

Dr.-Ing. Isabella Stilkerich
Software-Engineering Specialist
Schaeffler Technologies AG & Co. KG

Caroline Lu
Functional Safety Manager
Valeo Siemens

Shahryar Didarzadeh
Technical Specialist Systems Safety and Functional Safety Assessor
ZF TRW

Senior representative
HORIBA MIRA

Murat Erdogan
Line Manager, Functional Safety
Autoliv

Johannes Schild
Engineering Safety and Base System
(BEG-PT/ESBS)
Bosch Engineering GmbH

Mirjana Peitler
Functional Safety Manager, Complete Vehicle
Magna Steyr

For further information on speaker & delegates opportunities, please contact:
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MODIFICATION AND IMPACT ON CURRENT PROCESSES

Why the Implementation of the ISO 26262 Requires more Creativity now more than Ever
- Using the ISO 26262 as guidance, and not a module to allow integration of other process
- Moving with the trends and adapting the ISO to new technologies in the automotive industry
- Training other stakeholders about the ISO for holistic and sustainable safety result
- Developing Driver’s assistance functions for disabled drivers

INNOVATIVE AND FUTURE-ORIENTED SAFETY

Artificial Intelligence: Can ISO 26262 be used to Validate Machine Learning?
- Discussing the algorithms and aspects of the ISO implementation in hardware or software
- Changing the ISO to required automation, self-learning and environment
- Determining diagnostic coverage methods and goals for multicore devices
- Testing safety with NVIDIA and GPU with the ISO 26262: How accurate will it be?

Autonomous Cars: A change to ISO 26262 Practices
- New developments on Advanced Driver Assistance Systems (ADAS) comparable to the ISO
- Reviewing continuously the ISO 26262 implementation to new developments: Not leaving it to latter stages
- Introduction to ISO/PAS 21448, and its affects to ISO 26262
- New improvement on safety case.

A System of Systems Approach to Handle Challenges of Innovative and Future-Oriented Safety-Related ADAS Systems
- A generic approach for the top-down development challenges of ADAS System Items.
- A well-defined concept to identify the intended function of the Item and its operational and specific unintended behaviours that could lead to hazardous events.
- A well-structured approach to allocate the vehicle level functional safety requirements to the system elements of sub-systems and to their sub-systems.
- A modular and reusable platform approach is needed, which shall also be more efficient for different requirements at vehicle level.
- A large scale of agile development & distributed development is facing the challenges of functional safety. What are those and what can be done to handle them?

INTEGRATED SYSTEM AND IDENTIFICATION OF DIFFERENT ASPECTS OF ASIL

Overview of the process
- Integrating all 10 Parts of the ISO as an integrated system, and not in parts
  - Designing with goal-oriented thinking, and designing backwards
  - Creating an agile methodology adjustable to ISO 26262 rules
  - Constructing a plan that is both feasible and agreeable between stakeholders
  - Measuring level of safety with the ISO 26262 and making sure it is compatible
  - Ensuring all policies and procedures of the ISO is followed, measured and documented

Costs Estimation of ISO 26262 Applications Depending on ASIL (Automotive Safety Integrity Level)
- Existing and generally accepted estimation costs but not convincing
- Tenfold increase in cost
- Cost estimation from the number of requirements
- Assumptions for deriving a methodical approach of ISO 26262 costs estimation depending on ASIL
- Approach of ISO 26262 costs estimation proposal depending on ASIL and applied on a simple mechatronic system
- Extend of this approach on general mechatronic systems

Designing your System Architecture that is Feasible, Safe, and Relevant to your Goal

Monitoring Operations with Accurate Documenting and Software use

Managing and Planning for Better Functioning

Planning in Detail with Components, Function and People

Minimizing Interpretations/Subjectivity with Automated Traceability

Persist or Motivate: People Management in Automotive ISO 26262
HARDWARE AND SOFTWARE BASED TECHNIQUES FOR SYSTEM SAFETY

09:10 Case Study

Memory-Protection Techniques At a Glance*

• Reasons for Spatial Isolation of Software Components
• Hardware-Based Techniques
• Software-Based Techniques
• An Automated Approach to Memory Partitioning based on Application-Specific Requirements

Dr.-Ing. Isabella Stilkerich / Software-Engineering Specialist Schaeffler Technologies AG & Co. KG

11:10 Case Study

Software Driven Systems and its Takeover on the ISO 26262 Development

• Adapting the ISO 26262 to independent systems in the automotive innovation development
• Critically ensuring software systems clauses govern the functional safety standards
• Linking all systems to timing requirements and interface between other system components
• Watching out for threats, software security and hidden dangers with intensive monitoring

SAFETY AND SECURITY TECHNIQUES TO UNDERSTAND FAULTS AND DEFECTS

11:40 Applying Static Analysis to find Safety and Security Defects

• Examples of safety-relevant vs. security-relevant programming defects
• Similarities and differences of safety and security requirements at the programming level
• Applying sound static analysis to demonstrate safety and security properties
• Achieving data safety: identifying the impact of potentially corrupted input data

Dr.-Ing. Daniel Kästner / Chief Technical Officer / AbsInt Angewandte Informatik GmbH

12:10 Contemporary Safety Techniques: Fault Analysis

• Explore best technique to test failures during concept phase
• Embedding FHA (Functional Hazard Analysis) and FFA (Functional Failure Analysis)
• Determine safe/dangerous fault probability with pre-tests and various analysis techniques
• Virtual prototyping approach for fault analysis

12:40 Functional Safety or Security? Future of ISO 26262 in the Automotive Industry

• Defining what difference in function is between the two
• Exploring new innovation in automotive that will decide priority of functional safety professionals
• Recognizing the new roles of functional safety practitioners for successful project execution