

Functional Safety for Road Vehicles: New Challenges and Solutions for E-mobility and Automated Driving

By Hans-Leo Ross

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This book highlights the current challenges for engineers involved in product development and the associated changes in procedure they make necessary. Methods for systematically analyzing the requirements for safety and security mechanisms are described using examples of how they are implemented in software and hardware, and how their effectiveness can be demonstrated in terms of functional and design safety are discussed.

Given today’s new E-mobility and automated driving approaches, new challenges are arising and further issues concerning “Road Vehicle Safety” and “Road Traffic Safety” have to be resolved. To address the growing complexity of vehicle functions, as well as the increasing need to accommodate interdisciplinary project teams, previous development approaches now have to be reconsidered, and system engineering approaches and proven management systems need to be supplemented or wholly redefined.

The book presents a continuous system development process, starting with the basic requirements of quality management and continuing until the release of a vehicle and its components for road use. Attention is paid to the necessary definition of the respective development item, the threat-, hazard- and risk analysis, safety concepts and their relation to architecture development, while the book also addresses the aspects of product realization in mechanics, electronics and software as well as for subsequent testing, verification, integration and validation phases.

In November 2011, requirements for the Functional Safety (FuSa) of road vehicles were first published in ISO 26262. The processes and methods described here are intended to show developers how vehicle systems can be implemented according to ISO 26262, so that their compliance with the relevant standards can be demonstrated as part of a safety case, including audits, reviews and assessments.

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Editorial Review

From the Back Cover

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About the Author

Hans-Leo Ross graduated as an engineer from the University of Paderborn. For 'Preussag-Noell-LGA Gastechnik' he planned and realized safety relevant plants and systems for the oil and gas industry as well as for offshore chemical plants. He also worked for 'HIMA Paul Hildebrandt' where his responsibilities covered the distribution of safety-related control systems in Great Britain and North and Eastern Europe before he became Head of Product Management.

He has been working for Continental Automotive since 2004 where and was responsible for the introduction of functional safety and the coordination of the entire overall safety activities of the company. He has also been a member of VDA AK 16 since 2004 and has overseen the German mirror committee for ISO 26262, today's VDA AK 26-01 working group (Fundamentals for functional safety of road vehicles). Moreover, he served as a foundation member of WG 16 (ISO committee for ISO 26262) and has ever since been one of the German experts in this international task force until 2014. Both committees developed the essential foundations for functional safeties in automobiles.

From 2014 till 2015 he developed safety-related chassis control systems for the Mando Corporation Europe as “Head of Cross-Functional Development”. He was responsible for building-up an engineering infrastructure align with the requirements of ISO 262626 and leads the system and software development for electronic stability and park-brake systems.

Since August 2015, he is employed a senior consultant for development and functional safety at Bosch Engineering GmbH.

Users Review

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