Introduction To Adaptive Autosar

Everything you need to know about AUTOSAR 4.0.3 can be found in the 13,620 pages of the AUTOSAR specifications. Then why do you need this book? Quite simply, because the official AUTOSAR documents are written as a specification and not as a guideline! What makes matters worse is that these documents are structured and formulated as requirements. This is perfect if you need to implement the AUTOSAR standard, but less so if you simply want to know how to use it. Furthermore, while PDF files are well-suited for searching, they can't compete with a handy book where you can easily add your own personal comments and attach nice little colored sticky notes. The AUTOSAR Compendium - Part 1 summarizes the first part of the AUTOSAR 4.0.3 specification, namely the Application Layer and the RTE. It explains all of the different attributes, their usage and logical connections with other parts of the specification. Moreover, it accelerates your work with AUTOSAR considerably by answering the most commonly posed questions. All this, enriched with practical examples of tool-configuration, ARXML-code, generated RTE-code and actual C-code implementations. The Compendium is a priceless reference for software architects and software engineers who work with AUTOSAR each day. If you have questions that aren't answered in this book, please let me know and I'll try to cover it with the next edition. For more information on this book, please visit: http://www.ar-compendium.com or e-mail the author: part1@ar-compendium.co

Featuring a foreword by Bob Metcalfe, inventor of Ethernet! Ethernet, the most widely-used local area networking technology in the world, is moving from the server rooms of automobile manufacturers to their vehicles. As the quantity and variety of electronic devices in cars continues to grow, Ethernet promises to improve performance and enable increasingly powerful and useful applications in vehicles. Now, from Intrepid Control Systems (www.intrepidcs.com) - a leader in the world of automotive networking and diagnostic tools - comes the first book to describe the technology behind the biggest revolution in automotive networking since the 1980s: Automotive Ethernet - The Definitive Guide describes the fundamentals of networking, data link and physical layers of industry-standard Ethernet variants, as well as the new (one twisted pair 100Base Ethernet) 1TPCE or BroadR-Reach technology developed by Broadcom specifically for vehicle use. Topics covered include: in-vehicle networking requirements, comparing Ethernet to CAN and other existing networks (such as LIN, MOST, and FlexRay), TCP/UDP, IPv4/IPv6 and Diagnostics over IP (DoIP). Also covered are the Audio Video Bridging standards used to transport media over Ethernet: Stream Reservation Protocol or SRP (802.1Qat), Forward-Queuing and Time-Sensitive Streams or FOTSS (802.1Qav), Timing and Synchronization for Time-Sensitive Applications or gPTP (802.1as), and Transport Protocol for Time-Sensitive Applications or AVTP (IEEE 1722), and more. Automotive Ethernet: The Definitive Guide will also be available as an ebook for your Kindle!

This book constitutes the refereed proceedings of the 36th IFIP TC 11 International Conference on Information Security and Real World, held in Oslo, Norway, in June 2021. The 28 full papers presented were carefully reviewed and selected from 112 submissions. The papers present novel research on theoretical and practical aspects of security and privacy protection in ICT systems. They are organized in topical sections on digital signatures; vulnerability management; covert channels...
and cryptography; application and system security; privacy; network security; machine learning for security; and security management. The conference was held virtually.

This book gathers selected papers presented at the Inventive Communication and Computational Technologies conference (ICICT 2019), held on 29–30 April 2019 at Gnanamani College of Technology, Tamil Nadu, India. The respective contributions highlight recent research efforts and advances in a new paradigm called ISMAC (IoT in Social, Mobile, Analytics and Cloud contexts). Topics covered include the Internet of Things, Social Networks, Mobile Communications, Big Data Analytics, Bio-inspired Computing and Cloud Computing. The book is chiefly intended for academics and practitioners working to resolve practical issues in this area.

This book constitutes the proceedings of the Workshops held in conjunction with SAFECOMP 2020, 39th International Conference on Computer Safety, Reliability and Security, Lisbon, Portugal, September 2020. The 26 regular papers included in this volume were carefully reviewed and selected from 45 submissions; the book also contains one invited paper. The workshops included in this volume are: DECSOS 2020: 15th Workshop on Dependable Smart Embedded and Cyber-Physical Systems and Systems-of-Systems. DepDevOps 2020: First International Workshop on Dependable Development-Operation Continuum Methods for Dependable Cyber-Physical Systems. USDAI 2020: First International Workshop on Underpinnings for Safe Distributed AI. WAISE 2020: Third International Workshop on Artificial Intelligence Safety Engineering. The workshops were held virtually due to the COVID-19 pandemic.

Explores how the automotive industry can address the increased risks of cyberattacks and incorporate security into the software development lifecycle. While increased connectivity and advanced software-based automotive systems provide tremendous benefits and improved user experiences, they also make the modern vehicle highly susceptible to cybersecurity attacks. In response, the automotive industry is investing heavily in establishing cybersecurity engineering processes. Written by a seasoned automotive expert with abundant international industry expertise, Building Secure Cars: Assuring the Software Development Lifecycle introduces readers to various types of cybersecurity activities, measures, and solutions that can be applied at each stage in the typical automotive development process. This book aims to assist auto industry insiders build more secure cars by incorporating key security measures into their software development lifecycle. Readers will learn to better understand common problems and pitfalls in the development process that lead to security vulnerabilities. To overcome such challenges, this book details how to apply and optimize various automated solutions, which allow software development and test teams to identify and fix vulnerabilities in their products quickly and efficiently. This book balances technical solutions with automotive technologies, making implementation practical. Building Secure Cars is: • One of the first books to explain how the automotive industry can address the increased risks of cyberattacks, and how to incorporate security into the software development lifecycle • An optimal resource to help improve software security with relevant organizational workflows and technical solutions • A complete guide that covers introductory information to more advanced and practical topics • Written by an established professional working at the heart of the automotive industry • Fully illustrated with tables and visuals, plus real-life problems and suggested solutions to enhance the learning experience. This book is written for software development process owners, security policy owners, software developers and engineers, and cybersecurity teams in the automotive industry. All readers will be empowered to improve their organizations security postures by understanding and applying the practical technologies and solutions inside.

Learn about the basics and the future of vehicular networking research with this essential guide to in- and inter-vehicle communication. Industry 4.0 refers to fourth generation of industrial activity characterized by smart systems and internet-based solutions. This book describes the fourth revolution based on instrumented, interconnected and intelligent assets. The different book chapters provide a perspective on technologies and methodologies developed and deployed leading to this concept. With an aim to increase performance, productivity and flexibility, major application area of maintenance through Industry 4.0 in transportation, energy and infrastructure is explored, with effects on technology, organisation and operations from a systems perspective. This book focuses on scheduling algorithms for parallel applications on heterogeneous distributed systems, and addresses key scheduling requirements – high performance, low energy consumption, real time, and high reliability – from the perspectives of both theory and engineering practice. Further, it examines two typical application cases in automotive cyber-physical systems and cloud systems in detail, and discusses scheduling challenges in connection with resource costs, reliability and low energy. The book offers a comprehensive and systematic treatment of high-performance, low energy consumption, and high reliability issues on heterogeneous distributed systems, making it a particularly valuable resource for researchers, engineers and graduate students in the fields of computer science and engineering, information science and engineering, and automotive engineering, etc. The wealth of motivational examples with figures and tables make it easy to understand.

Get up to speed with the latest developments in Automotive Ethernet technology and implementation with this fully revised third edition. This updated edition offers an indispensable exposition on real-time computing, with particular emphasis on predictable scheduling algorithms. It introduces the fundamental concepts of real-time computing, demonstrates the most significant results in the field, and provides the essential methodologies for designing predictable computing systems used to support time-critical control applications. Along with an in-depth guide to the available approaches for the implementation and analysis of real-time applications, this revised edition contains a close examination of recent developments in real-time systems, including limited preemptive scheduling, resource reservation techniques, overload handling algorithms, and adaptive scheduling techniques. This volume serves as a fundamental advanced-level textbook. Each chapter
provides basic concepts, which are followed by algorithms, illustrated with concrete examples, figures and tables. Exercises and solutions are provided to enhance self-study, making this an excellent reference for those interested in real-time computing for designing and/or developing predictable control applications.

The inhaltliche Schwerpunkt des Tagungsband zur ATZlive-Veranstaltung “ Fahrassistenzsysteme 2016” liegt auf der noch vergleichsweise wenig ausgeprägten Disziplin IT-Security im und um das vernetzte Fahrzeug. Die Tagung ist eine unverzichtbare Plattform für den Wissens- und Gedankenaußtausch von Forschern und Entwicklern aller Unternehmen und Institutionen, die dieses Ziel verfolgen. Communication between vehicles and infrastructure will enable an entirely new way of managing traffic, reducing accidents, and increasing citizens’ quality of life. Networking Vehicles to Everything provides a 360-degree overview of networking vehicle technology, architecture, and future trends. This international account also covers challenges, case considerations, current activities in standards, product implementation, and upcoming trends such as software reconfiguration, mmWave technology and advanced control theory tools. Readers will gain in-depth understanding of the main bodies and institutions developing and regulating the technology, current technological battles including in particular IEEE 802.11p and 3GPP LTE V2X technologies which compete for the top-spot in a multi-billion market, and will become aware of currently open technological questions and corresponding trends in terms of applications and markets for any type of vehicle.

In chassis development, the three aspects of safety, vehicle dynamics and ride comfort are at the top of the list of challenges to be faced. Addressing this triad of challenges becomes even more complex when the chassis is required to interact with assistance systems and other systems for fully automated driving. What is more, new demands are created by the introduction of modern electric and electronic architectures. All these requirements must be met by the chassis, together with its subsystems, the steering, brakes, tires and wheels. At the same time, all physical relationships and interactions have to be taken into account.

This book presents the state of the art, challenges and future trends in automotive software engineering. The amount of automotive software has grown from just a few lines of code in the 1970s to millions of lines in today’s cars. And this trend seems destined to continue in the years to come, considering all the innovations in electric/hybrid, autonomous, and connected cars. Yet there are also concerns related to onboard software, such as security, robustness, and trust. This book covers all essential aspects of the field. After a general introduction to the topic, it addresses automotive software development, automotive software reuse, E/E architectures and safety, C-ITS and security, and future trends. This chapter details engineering for embedded software systems, tools and methods used in the automotive industry, software product lines, architectural frameworks, various related ISO standards, functional safety and safety cases, cooperative intelligent transportation systems, autonomous vehicles, and security and privacy issues. The intended audience includes researchers from academia who want to learn what the fundamental challenges are and how they are being tackled in the industry, and practitioners looking for cutting-edge academic findings. Although the book is not written as lecture notes, it can also be used in advanced master’s-level courses on software and system engineering. The book also includes a number of case studies that can be used for student projects.

This book constitutes the proceedings of the 32nd International Conference on Architecture of Computing Systems, ARCS 2019, held in Copenhagen, Denmark, in May 2019. The 24 full papers presented in this volume were carefully reviewed and selected from 40 submissions. ARCs has always been a conference attracting leading-edge research outcomes in Computer Architecture and Operating Systems, including a wide spectrum of topics ranging from embedded and real-time systems all the way to large-scale and parallel systems. The selected papers are organized in the following topical sections: Dependable systems; real-time systems; special applications; architecture; memory hierarchy; FPGA; energy awareness; NoC/SoC. The chapter ‘MEMPower: Data-Aware GPU Memory Power Model’ is open access under a CC BY 4.0 license at link.springer.com.

This book provides a comprehensive introduction to embedded flash memory, describing the history, current status, and future projections for technology, circuits, and systems applications. The authors describe current mainstream embedded flash technologies from floating-gate 1T, floating-gate with split-gate (1.5T) and 1T/1.5T SONOS flash technologies and their successful creation of various applications. Comparisons of these embedded flash technologies and future projections are also provided. The authors demonstrate a variety of applications for auto-motive, smart-IC cards, and low-power, representing the leading-edge technology developments for eFlash. The discussion also includes insights into future prospects of application-driven non-volatile memory technology in the era of smart advanced automotive system, such as ADAS (Advanced Driver Assistance System) and IoE (Internet of Everything). Trials on technology convergence and future prospects of embedded non-volatile memory in the new memory hierarchy are also described. Introduces the history of embedded flash memory technology for micro-controller products and how embedded flash innovations developed; Includes comprehensive and detailed descriptions of current mainstream embedded flash memory technologies, sub-system designs and applications; Explains why embedded flash memory requirements are different from those of stand-alone flash memory and how to achieve specific goals with technology development and circuit designs; Describes a mature and stable floating-gate 1T cell technology imported from stand-alone flash memory products - that then introduces embedded-specific split-gate memory cell technologies based on floating-gate storage structure and charge-trapping SONOS technology and their eFlash sub-system designs; Describes automotive and smart-IC card applications requirements and achievements in advanced eFlash beyond 40nm node.

This volume constitutes the refereed proceedings of the 28th International Conference on Systems, Software and Services Process Improvement, EuroSPI 2021, held in Krems, Austria, in September 2021*. The 42 full papers and 9 short papers presented were carefully reviewed and selected from 100 submissions. The volume presents core research contributions and selected industrial contributions. Core research contributions: SPI and emerging software and systems engineering paradigms; SPI and team skills and diversity; SPI and recent innovations; SPI and agile; SPI and standards and security and security norms; SPI and good/bad SPI practices in improvement; SPI and functional safety and cybersecurity; digitalisation of industry, infrastructure and e-mobility. Selected industrial contributions: SPI and emerging software and systems engineering paradigms; SPI and recent innovations; SPI and agile; SPI and standards and security and security norms; SPI and good/bad SPI practices in improvement; SPI and functional safety and cybersecurity; digitalisation of industry, infrastructure and e-mobility; virtual reality. *The conference was partially held virtually due to the COVID-19 pandemic.

This book introduces the concept of software architecture as one of the cornerstones of software in modern cars. Following a historical overview of the evolution of software in modern cars and a discussion of the main challenges driving that evolution, Chapter 2 describes the main architectural styles of automotive software and their use in cars’ software. Chapter 3 details this further by presenting two modern architectural styles, i.e. centralized and federated software architectures. In Chapter 4, readers will find a description of the software development processes used to develop software on the car manufacturers’ side. Chapter 5 then introduces AUTOSAR - an important standard in automotive software. Chapter 6 goes beyond simple architecture and describes the detailed design process for automotive software using Simulink, helping readers to understand how detailed design links to high-level design. *The new chapter 7 reports on how machine learning is exploited in automotive software e.g. for image recognition and how both on-board and off-board learning are applied. Next, Chapter 8 presents a method for assessing the quality of the architecture - ATAM (Architecture Trade-off Analysis Method) - and provides a sample assessment, while Chapter 9 presents an alternative way of assessing the architecture, namely by using quantitative measures and indicators. Subsequently Chapter 10 dives deeper into one of the specific properties discussed in Chapter 8 - safety - and details an important standard in that area, the ISO/IEC 26262 norm. Lastly, Chapter 11 presents a set of future trends that are currently
emerging and have the potential to shape automotive software engineering in the coming years. This book explores the concept of software architecture for modern cars and is intended for both beginning and advanced software designers. It mainly aims at two different groups of audience - professionals working with automotive software who need to understand concepts related to automotive architectures, and students of software engineering or related fields who need to understand the specifics of automotive software to be able to construct cars or their components. Accordingly, the book also contains a wealth of real-world examples illustrating the concepts discussed and requires no prior background in the automotive domain. Compared to the first edition, besides the two new chapters 3 and 7 there are considerable updates in chapters 5 and 8 especially.


Learn how automotive Ethernet is revolutionizing in-car networking from the experts at the core of its development. Providing an in-depth account of automotive Ethernet, from its background and development, to its future prospects, this book is ideal for industry professionals and academics alike. This book provides a comprehensive overview of the field of software processes, covering in particular the following essential topics: software process modelling, software process and lifecycle models, software process management, deployment and governance, and software process improvement (including assessment and measurement). It does not propose any new processes or methods; rather, it introduces students and software engineers to software processes and life cycle models, covering the different types ranging from "classical", plan-driven via hybrid to agile approaches. The book is structured as follows: In chapter 1, the fundamentals of the topic are introduced: the basic concepts, a historical overview, and the terminology used. Next, chapter 2 covers the various approaches to modelling software processes and lifecycle models, before chapter 3 discusses the contents of these models, addressing plan-driven, agile and hybrid approaches. The following three chapters address various aspects of using software processes and lifecycle models within organisations, and consider the management of these processes, their assessment and improvement, and the measurement of both software and software processes. Working with software processes normally involves various tools, which are the focus of chapter 7, before a look at current trends in software processes in chapter 8 rounds out the book. This book is mainly intended for graduate students and practicing professionals. It can be used as a textbook for courses and lectures, for self-study, and as a reference guide. When used as a textbook, it may support courses and lectures on software processes, or be used as complementary literature for more basic courses, such as introductory courses on software engineering or project management. To this end, it includes a wealth of examples and case studies, and each chapter is complemented by exercises that help readers gain a better command of the concepts discussed. An authoritative yet highly accessible guide to the design and operation of the FlexRay bus, the latest protocol for automotive network communications. A translation of the French edition, originally published in January 2011, this work is the result of numerous training courses that Dominique Paret has given in companies, and it provides detailed explanations of the design and operation of the FlexRay bus. Comprised of five parts the book covers: the FlexRay concept and its communication protocol; the FlexRay physical layer; synchronization and global time and; architecture of a node, components and development aid tools for hardware and software. Provides comprehensive treatment of the FlexRay network, including its implementation through a real automotive application Includes the latest specifications (Version 3) concluded by the FlexRay consortium widely expected to become the industry standard. Written by an author with in-depth experience of automotive electronics, including FlexRay, and presenter of specialist training courses to the industry Includes a review of industrial tools to help design and implement a FlexRay based distributor application. Vehicle Power Management addresses the challenge of improving vehicle fuel economy and reducing emissions without sacrificing vehicle performance, reliability and durability. It opens with the definition, objectives, and current research issues of vehicle power management, before moving on to a detailed introduction to the modeling of vehicle devices and components involved in the vehicle power management system, which has been proven to be the most cost-effective and efficient method for initial-phase vehicle research and design. Specific vehicle power management algorithms and strategies, including the analytical approach, optimal control, intelligent system approaches and wavelet technology, are derived and analyzed for realistic applications. Vehicle Power Management also gives a detailed description of several
key technologies in the design phases of hybrid electric vehicles containing battery management systems, component optimization, hardware-in-the-loop and software-in-the-loop. Vehicle Power Management provides graduate and upper level undergraduate students, engineers, and researchers in both academia and the automotive industry, with a clear understanding of the concepts, methodologies, and prospects of vehicle power management.

Until the late 1980s, information processing was associated with large mainframe computers and huge tape drives. During the 1990s, this trend shifted toward information processing with personal computers, or PCs. The trend toward miniaturization continues and in the future the majority of information processing systems will be small mobile computers, many of which will be embedded into larger products and interfaced to the physical environment. Hence, these kinds of systems are called embedded systems. Embedded systems together with their physical environment are called cyber-physical systems. Examples include systems such as transportation and fabrication equipment. It is expected that the total market volume of embedded systems will be significantly larger than that of traditional information processing systems such as PCs and mainframes. Embedded systems share a number of common characteristics. For example, they must be dependable, efficient, meet real-time constraints and require customized user interfaces (instead of generic keyboard and mouse interfaces). Therefore, it makes sense to consider common principles of embedded system design. Embedded System Design starts with an introduction into the area and a survey of specification models and languages for embedded and cyber-physical systems. It provides a brief overview of hardware devices used for such systems and presents the essentials of system software for embedded systems, like real-time operating systems. The book also discusses evaluation and validation techniques for embedded systems. Furthermore, the book presents an overview of techniques for mapping applications to execution platforms. Due to the importance of resource efficiency, the book also contains a selected set of optimization techniques for embedded systems, including special compilation techniques. The book closes with a brief survey on testing. Embedded System Design can be used as a text book for courses on embedded systems and as a source which provides pointers to relevant material in the area for PhD students and teachers. It assumes a basic knowledge of information processing hardware and software. Courseware related to this book is available at http://ls12-www.cs.tu-dortmund.de/~marwedel.

This book aims to teach the core concepts that make Self-driving vehicles (SDVs) possible. It is aimed at people who want to get their teeth into self-driving vehicle technology, by providing genuine technical insights where other books just skim the surface. The book tackles everything from sensors and perception to functional safety and cybersecurity. It also passes on some practical know-how and discusses concrete SDV applications, along with a discussion of where this technology is heading. It will serve as a good starting point for software developers or professional engineers who are eager to pursue a career in this exciting field and want to learn more about the basics of SDV algorithms. Likewise, academic researchers, technology enthusiasts, and journalists will also find the book useful. Key Features: Offers a comprehensive technological walk-through of what really matters in SDV development: from hardware, software, to functional safety and cybersecurity Written by an active practitioner with extensive experience in series development and research in the fields of Advanced Driver Assistance Systems (ADAS) and Autonomous Driving Covers theoretical fundamentals of state-of-the-art SLAM, multi-sensor data fusion, and other SDV algorithms. Includes practical information and hands-on material with Robot Operating System (ROS) and Open Source Car Control (OSCC). Provides an overview of the strategies, trends, and applications which companies are pursuing in this field at present as well as other technical insights from the industry.

This book introduces readers to the theory, design and applications of automotive transmissions. It covers multiple categories, e.g. AT, AMT, CVT, DCT and transmissions for electric vehicles, each of which has its own configuration and characteristics. In turn, the book addresses the effective design of transmission gear ratios, structures and control strategies, and other topics that will be of particular interest to graduate students, researchers and engineers. Moreover, it includes real-world solutions, simulation methods and testing procedures. Based on the author’s extensive first-hand experience in the field, the book allows readers to gain a deeper understanding of vehicle transmissions.

Introduction to Self-Driving Vehicle TechnologyCRC Press

A Clear Outline of Current Methods for Designing and Implementing Automotive Systems Highlighting requirements, technologies, and business models, the Automotive Embedded Systems Handbook provides a comprehensive overview of existing and future automotive electronic systems. It presents state-of-the-art methodological and technical solutions in the areas of in-vehicle architectures, multipartner development processes, software engineering methods, embedded communications, and safety and dependability assessment. Divided into four parts, the book begins with an introduction to the design constraints of automotive-embedded systems. It also examines AUTOSAR as the emerging de facto standard and looks at how key technologies, such as sensors and wireless networks, will facilitate the conception of partially and fully autonomous vehicles. The next section focuses on networks and protocols, including CAN, LIN, FlexRay, and TTCAN. The third part explores the design processes of electronic embedded systems, along with new design methodologies, such as the virtual platform. The final section presents validation and verification techniques relating to safety issues. Providing domain-specific solutions to various technical challenges, this handbook serves as a reliable, complete, and well-documented source of information on automotive embedded systems.

This book reflects the shift in design paradigm in automobile industry. It presents future innovations, often referred as “automotive systems engineering”. These cause fundamental innovations in the field of driver assistance systems and electro-mobility as well as fundamental changes in the architecture of the vehicles. New driving functionalities can only be realized if the software programs of multiple electronic control units work together correctly. This volume presents the new and innovative methods which are mandatory to master the complexity of the vehicle of the future.

With forewords by Jan Bosch, Nokia and Antero Taivalsaari, Sun Microsystems, Learn how to programme the mobile devices of the future! The importance of mobile systems programming has emerged over the recent years as a new domain in software development. The design of software that runs in a mobile device requires that developers combine the rules applicable in
embedded environment; memory-awareness, limited performance, security, and limited resources with features that are needed in workstation environment; modifiability, run-time extensions, and rapid application development. Programming Mobile Devices is a comprehensive, practical introduction to programming mobile systems. The book is a platform independent approach to programming mobile devices: it does not focus on specific technologies, and devices, instead it evaluates the component areas and issues that are common to all mobile software platforms. This text will enable the designer to programme mobile devices by mastering both hardware-aware and application-level software, as well as the main principles that guide their design.

Programming Mobile Devices: Provides a complete and authoritative overview of programming mobile systems. Discusses the major issues surrounding mobile systems programming; such as understanding of embedded systems and workstation programming. Covers memory management, the concepts of applications, dynamically linked libraries, concurrency, handling local resources, networking and mobile devices as well as security features. Uses generic examples from JavaTM and Symbian OS to illustrate the principles of mobile device programming. Programming Mobile Devices is essential reading for graduate and advanced undergraduate students, academic and industrial researchers in the field as well as software developers, and programmers.

The definitive reference for any C++ programmer or for programmers needing to work with C++ programs. Every book written about C++ refers frequently to the international standard that defines the language, this will be a must-have companion volume for everyone who is serious about programming in this language. The complete C++ standard as approved by international standards bodies (BSI and ANSI) The ONLY available bound version of the standard Foreword by Bjarne Stroustrup Most recent corrections and updates (Technical Corrigendum) are indicated with side bars to highlight where changes have taken place An introductory chapter explains what the standards process is and how the reader can participate in the standards process.

This fundamental work explains in detail systems for active safety and driver assistance, considering both their structure and their function. These include the well-known standard systems such as Anti-lock braking system (ABS), Electronic Stability Control (ESC) or Adaptive Cruise Control (ACC). But it includes also new systems for protecting collisions protection, for changing the lane, or for convenient parking. The book aims at giving a complete picture focusing on the entire system. First, it describes the components which are necessary for assistance systems, such as sensors, actuators, mechatronic subsystems, and control elements. Then, it explains key features for the user-friendly design of human-machine interfaces between driver and assistance system. Finally, important characteristic features of driver assistance systems for particular vehicles are presented: Systems for commercial vehicles and motorcycles.

Over the past 20 years, software architectures have significantly contributed to the development of complex and distributed systems. Nowadays, it is recognized that one of the critical problems in the design and development of any complex software system is its architecture, i.e. the organization of its architectural elements. Software Architecture presents the software architecture paradigms based on objects, components, services and models, as well as the various architectural techniques and methods, the analysis of architectural qualities, models of representation of architectural templates and styles, their formalization, validation and testing and finally the engineering approach in which these consistent and autonomous elements can be tackled.