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11th International Symposium, PETS 2011, Waterloo, ON, Canada, July 27-29, 2011, Proceedings
Smart Grid
Industrial IoT
Computational Intelligence Applications in Smart Grids
DIN EN IEC 62056-8-8 (VDE 0418-6-8-8), Electricity Metering Data Exchange - the DLMS/COSEM Suite. Part 8-8, Communication Profile for ISO/IEC 14908 Series Networks (IEC 62056-8-8:2020)
DIN EN IEC 62056-8-4, Electricity Metering Data Exchange - the DLMS/COSEM Suite. Part 8-4, Communication Profiles for Narrow-band OFDM PLC PRIME Neighbourhood Networks (IEC 62056-8-4:2018)
Datenkommunikation Der Elektrischen Energiemessung - DLMS/COSEM. Teil 8-4, Kommunikationsprofile Für Schmalband-OFDM-PLC-PRIME-Nachbarschaftsnetzwerke (IEC 62056-8-4:2018)
Challenges, Design Principles, Applications, and Security
Smart Grid
Smart Grid Applications, Communications, and Security
The DLMS/COSEM Suite. Mapping between the Common Information Model message profiles (IEC 61968-9) and DLMS/COSEM (IEC 62056) data models and protocols
Theories and Challenges for Systems Thinking in Practice
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Integrating Complex Systems, Social Simulation and Public Administration in Policy Research
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IoT Fundamentals
Standardization in Smart Grids
Water and Energy International
Industrial Communication Technology Handbook
4th D-A-CH Conference, EI 2015, Karlsruhe, Germany, November 12-13, 2015, Proceedings
Smart Grids – Fundamentals and Technologies in Electricity Networks
Security and Privacy in Communication Networks
Narrow and Broadband Standards, EMC, and Advanced Processing
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Electricity Metering Data Exchange
The Wireless Embedded Internet
Research Anthology on Smart Grid and Microgrid Development
Security and Privacy in Smart Grids
First International Conference, E-Energy 2010, First International ICST Conference, E-Energy 2010 Athens, Greece, October 14-15, 2010 Revised Selected Papers
Electric Vehicle Systems Architecture and Standardization Needs
Energy Informatics
Enterprise Information Architecture for A New Age
DIN EN IEC 62056-6-2, Electricity Metering Data Exchange - the DLMS/COSEM Suite. Part 6-2, COSEM Interface Classes (IEC 62056-6-2:2017)
Smart Grids
Advanced Technologies and Solutions, Second Edition
26th International Conference, CN 2019, Kamień Śląski, Poland, June 25–27, 2019, Proceedings
Computer Networks
Active Electrical Distribution Network

BOONE RAMIREZ

11th International Symposium, PETS 2011, Waterloo, ON, Canada, July 27-29, 2011, Proceedings Springer Nature
Application of Smart Grid Technologies: Case Studies in Saving Electricity in Different Parts of the World provides a wide international view of smart grid technologies and their implementation in all regions of the globe. A brief overview of smart grid concepts and state-of-the art technologies is followed by sections that highlight smart grid experiences in Asia, Africa, North America, South America, Europe and Australasia. Chapters address select countries or sub-regions, presenting their local technological needs and specificities, status of smart grid implementation, technologies of choice, impacts on their electricity markets, and future trends. Similar chapter makes it easier to compare these experiences. In a time when the smart grid is becoming a worldwide reality, this book is ideal for professionals in power transmission and distribution companies, as well as students and researchers in the same field. It is also useful for those involved in energy management and policymaking. Presents the status and challenges of smart grid technologies and their implementation around the globe Includes global case studies written by local experts and organized for easy comparison Provides a brief overview of smart grid concepts and currently available technologies
Smart Grid CRC Press
Smart grid and microgrid technology are growing exponentially as they are adopted throughout the world. These new technologies have revolutionized the way electricity is produced, delivered, and consumed, and offer a plethora of benefits as well as the potential for further growth. It is critical to examine the current stage of smart grid and microgrid development as well as the direction they are headed as they continue to expand in order to ensure that cost-effective, reliable, and efficient systems are put in place. The Research Anthology on Smart Grid and Microgrid Development is an all-encompassing reference source of the latest innovations and trends within smart grid and microgrid development. Detailing benefits, challenges, and opportunities, it is a crucial resource to fully understand the current opportunities that smart grids and microgrids present around the world. Covering a wide range of topics such as traditional grids, future smart grids, electrical distribution systems, and microgrid integration, it is ideal for engineers, policymakers, systems developers, technologists, researchers, government officials, academicians, environmental groups, regulators, utilities specialists, industry professionals, and students.
Industrial IoT CRC Press
Electricity Metering Data ExchangeThe DLMS/COSEM Suite. Mapping between the Common Information Model message profiles (IEC 61968-9) and DLMS/COSEM (IEC 62056) data models and protocolsDIN EN IEC 62056-6-2, Electricity Metering Data Exchange - the DLMS/COSEM Suite. Part 6-2, COSEM Interface Classes (IEC 62056-6-2:2017)Datenkommunikation Der Elektrischen Energiemessung - DLMS/COSEM. Teil 6-2, COSEM Interface-Klassen (IEC 62056-6-2:2017)POWER SYSTEM AUTOMATIONBuild Secure Power System SCADA & Smart GridsNotion Press
Computational Intelligence Applications in Smart Grids IGI Global
Electrical equipment, Meters, Electricity supply meters, Data transfer, Data handling, Interfaces (data processing), Power control (electric), Information exchange, Data processing, Data transmission, Identification methods, Codes, Coded representation, Data, Tags (data processing), Open systems interconnection
DIN EN IEC 62056-8-8 (VDE 0418-6-8-8), Electricity Metering Data Exchange - the DLMS/COSEM Suite. Part 8-8, Communication Profile for ISO/IEC 14908 Series Networks (IEC 62056-8-8:2020) Springer
The first successful finished Smart Grid Prototype Projects deliver new requirements and best practices to meet them. These solutions will be the base for the upcoming norms and standards in the near future. This domain is not only part of one Standard developing Organization (SDO), but also of many different organizations like ITU, ISO, IEC and additionally for the electro mobility part the SAE. This results in many standards which are based on different aspects. Furthermore the European mirror organizations (ETSI,CEN, CENELEC) as well as the German mirror groups of these groups are involved, which are delivering further rules and adaption for the local market. Because of this diversity of organizations involved, it is difficult for the local companies (which includes energy utility, manufacturer and software producer specialized on integration) to identify the relevant trends, standardization groups and technologies necessary. With the EU Mandate M490 to CEN/CNELEC and TESI and the Commission being a driving force (e.g. ftp://ftp.cencenelec.eu/CENELEC/Smartgrid/SmartGridFinalReport.pdf and http://www.cenelec.eu/aboutcenelec/whatwedo/technologysectors/smartgrids.html) standardization becomes more and more important – but it’s complex and not easy to be understood. Here at OFFIS, we provide training but we are always asked for textbooks on our tranings. Based on our modules for the SG tranings, we would estimate the following chapters to be relevant to SG stakeholders in standardization (roughly 16-20 pages per chapter).
DIN EN IEC 62056-8-4, Electricity Metering Data Exchange - the DLMS/COSEM Suite. Part 8-4, Communication Profiles for Narrow-band OFDM PLC PRIME Neighbourhood Networks (IEC 62056-8-4:2018) Cambridge University Press
This book constitutes the refereed proceedings of the 10th International Symposium, PETS 2011, held in Waterloo, Canada, in July 2011. The 15 revised full papers were carefully reviewed and selected from 61 submissions. The papers address design and realization of privacy services for the Internet, other data systems and communication networks. Presenting novel research on all theoretical and practical aspects of privacy technologies, as well as experimental studies of fielded systems the volume also features novel technical contributions from other communities such as law, business, and data protection authorities, that present their perspectives on technological issues.
Datenkommunikation Der Elektrischen Energiemessung - DLMS/COSEM. Teil 8-4, Kommunikationsprofile Für Schmalband-OFDM-PLC-PRIME-Nachbarschaftsnetzwerke (IEC 62056-8-4:2018)
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A fully comprehensive introduction to smart grid standards and their applications for developers, consumers and service providers The critical role of standards for smart grid has already been realized by world-wide governments and industrial organizations. There are hundreds of standards for Smart Grid which have been developed in parallel by different organizations. It is therefore necessary to arrange those standards in such a way that it is easier for readers to easily understand and select a particular standard according to their requirements without going into the depth of each standard, which often spans from hundreds to thousands of pages. The book will allow people in the smart grid areas and in the related industries to easily understand the fundamental standards of smart grid, and quickly find the building-block standards they need from hundreds of standards for implementing a smart grid system. The authors highlight the most advanced works and efforts now under way to realize an integrated and interoperable smart grid, such as the “NIST Framework and Roadmap for Smart Grid Interoperability Standards Release 2.0”, the” IEC Smart Grid Standardization Roadmap”, the ISO/IEC’s “Smart Grid Standards for Residential Customers”, the ZigBee/HomePlug’s “Smart Energy Profile Specification 2.0”, IEEE’s P2030 “Draft Guide for Smart Grid Interoperability of Energy Technology and Information Technology Operation with the Electric Power System (EPS), and End-Use

Applications and Loads", and the latest joint research project results between the world's two largest economies, US and China. The book enables readers to fully understand the latest achievements and ongoing technical works of smart grid standards, and assist industry utilities, vendors, academia, regulators, and other smart grid stakeholders in future decision making. The book begins with an overview of the smart grid, and introduces the opportunities in both developed and developing countries. It then examines the standards for power grid domain of the smart grid, including standards for blackout prevention and energy management, smart transmission, advanced distribution management and automation, smart substation automation, and condition monitoring. Communication and security standards as a whole are the backbone of smart grid and their standards, including those for wired and wireless communications, are then assessed. Finally the authors consider the standards and on-going work and efforts for interoperability and integration between different standards and networks, including the latest joint research effort between the world's two largest economies, US and China. A fully comprehensive introduction to smart grid standards and their applications for developers, consumers and service providers Covers all up-to-date standards of smart grid, including the key standards from NIST, IEC, ISO ZigBee, IEEE, HomePlug, SAE, and other international and regional standardization organizations. The Appendix summarizes all of the standards mentioned in the book Presents standards for renewable energy and smart generation, covering wind energy, solar voltaic, fuel cells, pumped storage, distributed generation, and nuclear generation standards. Standards for other alternative sources of energy such as geothermal energy, and bioenergy are briefly introduced Introduces the standards for smart storage and plug-in electric vehicles, including standards for distributed energy resources (DER), electric storage, and E-mobility/plug-in vehicles The book is written in an accessible style, ideal as an introduction to the topic, yet contains sufficient detail and research to appeal to the more advanced and specialist reader.

Challenges, Design Principles, Applications, and Security CRC Press

Discusses concepts of smart grid technologies, from the perspective of integration with cloud computing and data management approaches.

Smart Grid John Wiley & Sons

The latest edition features a new chapter on implementation and operation of an integrated smart grid with updates to multiple chapters throughout the text. New sections on Internet of things, and how they relate to smart grids and smart cities, have also been added to the book. It describes the impetus for change in the electric utility industry and discusses the business drivers, benefits, and market outlook of the smart grid initiative. The book identifies the technical framework of enabling technologies and smart solutions and describes the role of technology developments and coordinated standards in smart grid, including various initiatives and organizations helping to drive the smart grid effort. With chapters written by leading experts in the field, the text explains how to plan, integrate, implement, and operate a smart grid.

Smart Grid Applications, Communications, and Security World Scientific

Based on papers from the 4th Business Systems Laboratory International Symposium (BSLAB) in 2016, this volume contributes to the business management, organizational and innovation literature by providing insights on the antecedents of systems thinking in the business systems domain. The Business Systems Laboratory International Symposium addresses current global economic and social challenges from a systemic perspective, drawing from the domains of management, economics, engineering and sociology. In particular, the 2016 Symposium focuses on the epistemological, theoretical, methodological, technical and practical contributions that represent advancements in the theory and practice of governing business systems to address present and future challenges in the global economy. The contributions explore the application of systems thinking to governance, involving the introduction of new administrative organizational and managerial activities aimed toward organizational innovation and control.

The DLMS/COSEM Suite. Mapping between the Common Information Model message profiles (IEC 61968-9) and DLMS/COSEM (IEC 62056) data models and protocols Artech House

Featuring contributions from major technology vendors, industry consortia, and government and private research establishments, the Industrial Communication Technology Handbook, Second Edition provides comprehensive and authoritative coverage of wire- and wireless-based specialized communication networks used in plant and factory automation, automotive applications, avionics, building automation, energy and power systems, train applications, and more. New to the Second Edition: 46 brand-new chapters and 21 substantially revised chapters Inclusion of the latest, most significant developments in specialized communication technologies and systems Addition of new application domains for specialized networks The Industrial Communication Technology Handbook, Second Edition supplies readers with a thorough understanding of the application-specific requirements for communication services and their supporting technologies. It is useful to a broad spectrum of professionals involved in the conception, design, development, standardization, and use of specialized communication networks as well as academic institutions engaged in engineering education and vocational training.

Theories and Challenges for Systems Thinking in Practice Wiley

Written in an easy to understand style, this book provides a comprehensive overview of the physical-cyber security of Industrial Control Systems benefitting the computer science and automation engineers, students and industrial cyber security agencies in obtaining essential understanding of the ICS cyber security from concepts to realization. The Book Ø Covers ICS networks, including zone based architecture and its deployment for product delivery and other Industrial services. Ø Discusses SCADA networking with required cryptography and secure industrial communications. Ø Furnishes information about industrial cyber security standards presently used. Ø Explores defence-in-depth strategy of ICS from conceptualisation to materialisation. Ø Provides many real-world documented examples of attacks against industrial control systems and mitigation techniques. Ø Is a suitable material for Computer Science and Automation engineering students to learn the fundamentals of industrial cyber security.

Policy Practice and Digital Science CRC Press

This book addresses the need to understand the development, use, construction, and operation of smart microgrids (SMG). Covering selected major operations of SMG like dynamic energy management, demand response, and demand dispatch, it describes the design and operational challenges of different microgrids and provides feasible solutions for systems. Smart Micro Grid presents communication technologies and governing standards used in developing communication networks for realizing various smart services and applications in microgrids. An architecture facilitating bidirectional communication for smart distribution/microgrid is brought out covering aspects of its design, development and validation. The book is aimed at graduate, research students and professionals in power, power systems, and power electronics. Features: • Covers a broad overview of the benefits, the design and operation requirements, standards and communication requirements for deploying microgrids in distribution systems. • Explores issues related to planning, expansion, operation, type of microgrids, interaction among microgrid and distribution networks, demand response, and the technical requirements for the communication network. • Discusses current standards and common practices to develop and operate microgrids. • Describes technical issues and requirements for operating microgrids. • Illustrates smart communication architecture and protocols.

Build Secure Power System SCADA & Smart Grids CRC Press

The explosive growth in data, computational power, and social media creates new opportunities for innovating the processes and solutions of Information and communications technology (ICT) based policy-making and research. To take advantage of these developments in the digital world, new approaches, concepts, instruments and methods are needed to navigate the societal and computational complexity. This requires extensive interdisciplinary knowledge of public administration, policy analyses, information systems, complex systems and computer science. This book provides the foundation for this new interdisciplinary field, in which various traditional disciplines are blending. Both policy makers, executors and those in charge of policy implementations acknowledge that ICT is becoming more important and is changing the policy-making process, resulting in a next generation policy-making based on ICT support. Web 2.0 and even Web 3.0 point to the specific applications of social networks, semantically enriched and linked data, whereas policy-making has also to do with the use of the vast amount of data, predictions and forecasts, and improving the outcomes of policy-making, which is confronted with an increasing complexity and uncertainty of the outcomes. The field of policy-making is changing and driven by developments like open data, computational methods for processing data, opining mining, simulation and visualization of rich data sets, all combined with public engagement, social media and participatory tools.

Integrating Complex Systems, Social Simulation and Public Administration in Policy Research Notion Press

Today, billions of devices are Internet-connected, IoT standards and protocols are stabilizing, and technical professionals must increasingly solve real problems with IoT technologies. Now, five leading Cisco IoT experts present the first comprehensive, practical reference for making IoT work. IoT Fundamentals brings together knowledge previously available only in white papers, standards documents, and other hard-to-find sources—or nowhere at all. The authors begin with a high-level overview of IoT and introduce key concepts needed to successfully design IoT solutions. Next, they walk through each key technology, protocol, and technical building block that combine into complete IoT solutions. Building on these essentials, they present several detailed use cases, including manufacturing, energy, utilities, smart+connected cities, transportation, mining, and public safety. Whatever your role or existing infrastructure, you'll gain deep insight what IoT applications can do, and what it takes to deliver them. Fully covers the principles and components of next-generation wireless networks built with Cisco IOT solutions such as IEEE 802.11 (Wi-Fi), IEEE 802.15.4-2015 (Mesh), and LoRaWAN Brings together real-world tips, insights, and best practices for designing and implementing next-generation wireless networks Presents start-to-finish configuration examples for common deployment scenarios Reflects the extensive first-hand experience of Cisco experts

Networking Technologies, Protocols, and Use Cases for the Internet of Things Apress

"It is stunningly thorough and takes readers meticulously through the design, configuration and operation of IPv6-based, low-power, potentially mobile radio-based networking." Vint Cerf, Vice President and Chief Internet Evangelist, Google This book provides a complete overview of IPv6 over Low Power Wireless Area Network (6LoWPAN) technology In this book, the authors provide an overview of the 6LoWPAN family of standards, architecture, and related wireless and Internet technology. Starting with an overview of the IPv6 'Internet of Things', readers are offered an insight into how these technologies fit together into a complete architecture. The 6LoWPAN format and related standards are then covered in detail. In addition, the authors discuss the building and operation of 6LoWPAN networks, including bootstrapping, routing, security, Internet ingration, mobility and application protocols. Furthermore, implementation aspects of 6LoWPAN are covered. Key Features: Demonstrates how the 6LoWPAN standard makes the latest Internet protocols available to even the most minimal embedded devices over low-rate wireless networks Provides an overview of the 6LoWPAN standard, architecture and related wireless and Internet technology, and explains the 6LoWPAN protocol format in detail Details operational topics such as bootstrapping, routing, security, Internet integration, mobility and application protocols Written by expert authors with vast experience in the field (industrial and academic) Includes an accompanying website containing tutorial slides, course material and open-source code with examples (http://6lowpan.net) 6LoWPAN: The Wireless Embedded Internet is an invaluable reference for professionals working in fields such as telecommunications, control, and embedded systems. Advanced students and teachers in electrical engineering, information technology and computer science will also find this book useful.

IoT Fundamentals John Wiley & Sons

Presenting the work of prominent researchers working on smart grids and related fields around the world, Security and Privacy in Smart Grids identifies state-of-the-art approaches and novel technologies for smart grid communication and security. It investigates the fundamental aspects and applications of smart grid security and privacy and reports on the latest advances in the range of related areas—making it an ideal reference for students, researchers, and engineers in these fields. The book explains grid security development and deployment and introduces novel approaches for securing today's smart grids. Supplying an overview of recommendations for a technical smart grid infrastructure, the book describes how to minimize power consumption and utility expenditure in data centers. It also: Details the challenges of cybersecurity for smart grid communication infrastructures Covers the regulations and standards relevant to smart grid security Explains how to conduct vulnerability assessments for substation automation systems Considers smart grid automation, SCADA system security, and smart grid security in the last mile The book's chapters work together to provide you with a framework for implementing effective security through this growing system. Numerous figures, illustrations, graphs, and charts are included to aid in comprehension. With coverage that includes direct attacks, smart meters, and attacks via networks, this versatile reference presents actionable suggestions you can put to use immediately to prevent such attacks.

Standardization in Smart Grids Springer

This book constitutes the refereed proceedings of the 4th D-A-CH Conference on Energy Informatics, D-A-CH EI 2015, held in Karlsruhe, Germany, in November 2015.The 18 revised full papers presented were carefully reviewed and selected from 36 submissions. The papers are organized in topical sections on distributed energy sources and storage, smart meters and monitoring, research lab infrastructures, electric mobility, communication and security, and modeling and simulation.

Water and Energy International Academic Press

The book presents a broad overview of emerging smart grid technologies and communication systems, offering a helpful guide for future research in the field of electrical engineering and communication engineering. It explores recent advances in several computing technologies and their performance evaluation, and addresses a wide range of topics, such as the essentials of smart grids for fifth generation (5G) communication systems. It also elaborates the role of emerging communication systems such as 5G, internet of things (IoT), IEEE 802.15.4 and cognitive radio networks in smart grids. The book includes detailed surveys and case studies on current trends in smart grid

systems and communications for smart metering and monitoring, smart grid energy storage systems, modulations and waveforms for 5G networks. As such, it will be of interest to practitioners and researchers in the field of smart grid and communication infrastructures alike.

Industrial Communication Technology Handbook Springer This book considers the emerging technologies and methodologies of the application of computational intelligence to smart grids. From a conceptual point of view, the smart grid is the convergence of information and operational technologies applied to the electric grid, allowing sustainable options to customers and improved levels of security. Smart grid technologies include advanced sensing systems, two-way high-speed communications, monitoring and enterprise analysis software, and related services used to obtain location-specific and real-time actionable data for the provision of enhanced services for both system operators (i.e. distribution automation, asset management, advanced metering infrastructure) and end-users (i.e. demand side management, demand response). In this context, a crucial issue is how to support the evolution of existing electrical grids from static hierarchal systems to self-organizing, highly scalable and pervasive networks. Modern trends are oriented toward the employment of computational intelligence techniques for deploying advanced control, protection and monitoring architectures that move away from the older centralized paradigm to systems distributed across the field with an increasing pervasion of intelligence devices. The large-scale deployment of computational intelligence technologies in smart grids could lead to a more efficient tasks distribution amongst energy resources and, consequently, to a sensible improvement of the electrical grid flexibility. Contents: Wide-Area Monitoring, Protection and Control Needs, Applications, and Benefits (Vahid Madani, Damir Novosel and Roger King)A MINLP Approach for Network Reconfiguration and Dispatch in Distribution Systems (Sergio Bruno and Massimo La Scala)Multi-Objective Optimization Methods for Solving the Economic Emission Dispatch Problem (Balusu Srinivasa Rao and Kanchapogu Vaisakh)Voltage Security Assessment and Optimal Load Shedding Using the CBR Approach (Narayan Prasad Patidar)A Novel State Estimation Paradigm Based on Artificial Dynamic Models (Francesco Torelli and Alfredo Vaccaro)Improving Voltage Regulation in Smart Grids through Adaptive Fuzzy Agents (Giovanni Acampora and Autilia Vitiello)Smart Metering (Daniele Gallo, Carmine Landi, Marco Landi and Mario Luiso) Readership: Graduate students and researchers interested in smart grids and advanced power networks. Key Features:This book will address many relevant topics ranging from methods for balancing resources to various control and security aspects. It not only focuses on technological breakthroughs and roadmaps in implementing the technology, but also presents the much-needed sharing of best practicesIt will integrate scientific contributions developed by highly qualified international experts very active in the fields of power systems management and computational intelligenceIt will present and discuss various case studies aimed at assessing the benefits deriving from the application of the proposed methodologies on real power systemsKeywords:Smart Grids;Power Systems;Renewable Power Generation;Computational Intelligence