This open access book addresses the practical challenges that Industry 4.0 presents for SMEs. While large companies are already responding to the changes resulting from the fourth industrial revolution, small businesses are in danger of falling behind due to the lack of examples, best practices and established methods and tools. Following on from the publication of the previous book 'Industry 4.0 for SMEs: Challenges, Opportunities and Requirements', the authors offer in this new book innovative results from research on smart manufacturing, smart logistics and managerial models for SMEs. Based on a large scale EU-funded research project involving seven academic institutions from three continents and a network of over fifty small and medium sized enterprises, the book reveals the methods and tools required to support the successful implementation of Industry 4.0 along with practical examples. Digital transformation is reshaping the business arena as new, successful digital business models are increasing agility and presenting better ways to handle business than the traditional alternatives. Industry 4.0 affects everything in our daily lives and is blurring the line between the physical, the biological, and the digital. This created an environment where technology and humans are so closely integrated that it is impacting every activity within the organizations. Specifically, contracting processes and procedures are challenged to align with the new business dynamics as traditional contracts are no longer fitting today's agile and continuously changing environments. Businesses are required to facilitate faster, more secure, soft, and real-time transactions while protecting stakeholders' rights and obligations. This includes agile contracts which are dynamically handling scope changes, smart contracts that can automate rule-based functions, friction-less contracts that can facilitate different activities, and opportunity contracts that looks toward the future. Innovative and Agile Contracting for Digital Transformation and Industry 4.0 analyzes the consequences, benefits, and possible scenarios of contract transformation under the pressure of new technologies and business dynamics in modern times. The chapters cover the problems, issues, complications, strategies, governance, and risks related to the development and enforcement of digital transformation contracting practices. While highlighting topics in the area of digital transformation and contracting such as artificial intelligence, digital business, emerging technologies, and blockchain, this book is ideally intended for business, engineering, and technology practitioners and policy makers, along with practitioners, stakeholders, researchers, academicians, and students interested in understanding the scope, complexity, and importance of innovative contracts and agile contracting.

This book proposes essential methods, models, and case studies for Sustainable Logistics and Production in Industry 4.0. In addition to identifying and discussing various challenges and future prospects, it also features numerous case studies and quantitative research from different sectors. The authors (which include academics and managers) present insightful tips on the technical, organizational and social aspects of implementing Sustainable Logistics and Production in Industry 4.0. In today's world, changes are coming faster and more unpredictably. Production is becoming more automated, computerized and complex. In short, Industry 4.0 is creating many new opportunities, but at the same time several new challenges. This book offers a valuable resource for all academics and practitioners who want to deepen their knowledge of Sustainable Logistics and Production in Industry 4.0.

How the marriage of Industry 4.0 and the Circular Economy can radically transform waste management—and our world Do we really have to make a choice between a wasteless and nonproductive world or a wasteful and ultimately self-destructive one? Futurist and world-renowned waste management scientist Antonis Mavropoulos and sustainable business developer and digital strategist Anders Nilsen respond with a ringing and optimistic “No!” They explore the Earth-changing potential of a happy (and wasteless) marriage between Industry
4.0 and a Circular Economy that could—with properly reshaped waste management practices—deliver transformative environmental, health, and societal benefits. This book is about the possibility of a brand-new world and the challenges to achieve it. The fourth industrial revolution has given us innovations including robotics, artificial intelligence, 3D-printing, and biotech. By using these technologies to advance the Circular Economy—where industry produces more durable materials and runs on its own byproducts—the waste management industry will become a central element of a more sustainable world and can ensure its own, but well beyond business as usual, future. Mavropoulos and Nilsen look at how this can be achieved—a wasteless world will require more waste management—and examine obstacles and opportunities such as demographics, urbanization, global warming, and the environmental strain caused by the rise of the global middle class.

- Explore the new prevention, reduction, and elimination methods transforming waste management
- Comprehend and capitalize on the business implications for the sector
- Understand the theory via practical examples and case studies
- Appreciate the social benefits of the new approach

Waste-management has always been vital for the protection of health and the environment. Now it can become a crucial role model in showing how Industry 4.0 and the Circular Economy can converge to ensure flourishing, sustainable—and much brighter—future.

Small and medium enterprises (SMEs) have been widely acknowledged to be an important agent of development because of their potential for addressing unemployment, inequality, and poverty, as well as promoting inclusiveness in economic development. The sector is critical for achieving the country’s sustainable growth. However, there is a lack of research on the adaptations SMEs are making in today’s technologically driven market. Challenges and Opportunities for SMEs in Industry 4.0 is a collection of innovative research on the methods and applications of modern business development and innovative strategies for small and medium enterprises in the age of smart industrialism. This book features a wide range of topics including business intelligence, collaborative manufacturing, and organizational networking.

This reference source is ideally designed for managers, policymakers, economists, entrepreneurs, strategists, researchers, industrialists, academicians, educators, and students. The most approachable guide to Smart Manufacturing written for laypeople with no background or experience in the industry. How manufacturing has evolved in the United States and how an increased emphasis on domestic manufacturing will result from the COVID19 crisis. This in turn will create career opportunities for those that gain the skills and knowledge needed to operate an Industry 4.0 factory. Chapters detailing specific technologies used to shift the mass production paradigm to one of mass personalization in environmentally friendly factories. These include robotics, augmented and virtual reality, artificial intelligence, MES and ERP software programs, and other Industrial Internet of Things technologies. Job titles, descriptions, and salary ranges are provided. Lists of movies and films that feature the technology are included in each chapter for more relaxed learning. Soft skills are discussed in a chapter as an equally important component for personal success as the hard skills of engineering and software programming.

This book provides an overview of the burgeoning next generation of industry—Industry 4.0, which promises to increase flexibility in manufacturing in tandem with mass communication, improved productivity and better quality. This volume provides a comprehensive and holistic overview of intelligent manufacturing, process planning, assessment of product development opportunities, aspects of risk management, education and qualification requirements, socio-technical considerations and the sustainability of business models. This volume will be of interest to engineers, entrepreneurs, academics and students working in these fields. This volume brings together expert contributors to explore opportunities and challenges that Industry 4.0 is likely to pose for regions, firms and jobs in Europe. Drawing on theory and empirical cases, it considers emerging issues like servitization, new innovation models for local
production systems, and the increase in reshoring.
Sustainability, Technology and Innovation 4.0 is a holistic perception and analysis of innovation at the level of public organisations, innovation in industry and innovation in HR. Its chapters collectively present a thesis that Innovation 4.0 signals a technological revolution that has the opportunity to prevent environmental degradation and, in particular, to stop climate warming, the effects of which may disrupt the process of sustainable development. Uniquely, this edited book offers a comprehensive and multi-faceted examination of Innovation 4.0, fulfilling methodical, empirical and utilitarian goals. The methodological objective is to present tools that allow the identification, analysis and assessment of the relationship between Innovation 4.0 and inspiration that will carry society towards a new economic and social order. Its empirical aim is to enable the analysis and evaluation of the role of public organisations, innovation in industry and innovation in HR in the process of building sustainable development of the global environment. The book’s utilitarian goal is a recommendation for global organisations of Innovation 4.0 as an instrument to stimulate an innovative economy. This is a high-level research book aimed at postgraduates, MBA students, researchers and academics from business colleges and universities, and may also provide a valuable strategic perspective for business executives.

"Industry 4.0: Smart Factories" comes after our first book "Industry 4.0: Navigating the Manufacturing Revolution in ASEAN" (2019), and takes us through the key technologies as the pillars to build up a Smart Factory to transform the current manufacturing operations into a brand new model driven by the innovation based on the real-time data collection, processing and analysis. We also present our understanding of the principles of building a real smart factory. As a surging region, ASEAN is on its way to gain a lot of value from this round of revolution and catch up with the leading economies and find our place in the global value chain.

This open access book explores the concept of Industry 4.0, which presents a considerable challenge for the production and service sectors. While digitization initiatives are usually integrated into the central corporate strategy of larger companies, smaller firms often have problems putting Industry 4.0 paradigms into practice. Small and medium-sized enterprises (SMEs) possess neither the human nor financial resources to systematically investigate the potential and risks of introducing Industry 4.0. Addressing this obstacle, the international team of authors focuses on the development of smart manufacturing concepts, logistics solutions and managerial models specifically for SMEs. Aiming to provide methodological frameworks and pilot solutions for SMEs during their digital transformation, this innovative and timely book will be of great use to scholars researching technology management, digitization and small business, as well as practitioners within manufacturing companies.

This book reports a comprehensive study on the Industry 4.0 technologies focused on the aerospace sector, presenting a blueprint of the sector and the background of the key technologies. The author describes the adoption of some of these technologies by some of the major aerospace companies and organizations.

This book includes chapters related to the analysis of cultural differences as a tool to enrich tacit knowledge and make processes more efficient, the factors that influence job satisfaction and the value of social capital as a competitive strategy to achieve productivity and competitiveness of organizations, in addition to research of the utmost importance to discover the facets of the diamond with respect to the symbolic capital of the organizations where Generation Z will work and how it will discover the best time to establish an innovation ecosystem that will influence its work trajectory. Industry 4.0 requires a major paradigm shift, since human capital is a source of competitive advantage. Being competitive enables to a company, a region, a society or a country the power to advance in different areas, contributing to the benefit of a social group, therefore, and organizations need to make efforts that lead to
adding value and generate a competitive advantage. Industrial applications based on artificial intelligence can change our lives in just one generation. The chapters in this book show progress and challenges related to real-world applications, as well as the need to strengthen human capital to achieve systemic and comprehensive competitiveness required in the XXI century.

The world is changing faster and faster. The Fourth Industrial Revolution is incoming with a lot of impacts on employment such as unemployment, massive layoffs, and the displacement of workers by self-service technologies. So how to create your own economy in Industry 4.0? How will you stand out and discover new opportunities in one of the most transformational times in human history? This book provides answers that translate job anxiety and far-future thinking into insights that will allow you to take a glimpse into the future of work and successfully navigate the Fourth Industrial Revolution, aka Industry 4.0. The book offers the most pragmatic view of the impact of emerging technologies on employment, the urgency to reinvent and upskill yourself, and explore opportunities in the Fourth Industrial Revolution to create your own employment. The book includes 21st-century business ideas.

This book reflects the futuristic scientific view of the consequences of transition to Industry 4.0 for climate change. The authors present a systemic overview of the current negative consequences of digitization for the environment, new outlines of the energy sphere in Industry 4.0 and the change of the environment pollution level in Industry 4.0. The book also analyses the ecological consequences of growth and development of Industry 4.0, and considers Industry 4.0 as an alternative to fighting climate change. The book presents a view on fighting climate change in Industry 4.0 from the positions of shifting the global communitys attention from environment protection to formation of the digital economy. A logical continuation of this book is a view from the opposite side, which would allow reflecting the contribution of Industry 4.0 into fighting climate change and the perspectives of harmonization of these top-priority directions of the global economys development. This book will be of interest to academics and practitioners interested in climate change and development of Industry 4.0, as well contributing to a national economic policy for fighting climate change and corporate strategies of sustainable development in Industry 4.0.

"This book explores Industry 4.0 and the important tech apps that revolutionize and disrupt the modern organization, such as artificial intelligence, machine learning and programming languages"--

Agile Business Leadership Methods for Industry 4.0 is a collection of innovative research on new leadership styles that will develop agile managers and business leaders who can improve company success in the fast-paced environments created by Industry 4.0.

The main theme of the proceedings of the 4th International Conference on Teacher Education and Professional Development (InCoTEPD 2019) is "Teacher Education and Professional Development in Industry 4.0". The papers have been carefully grouped under the subthemes of teacher education and professional development, curriculum, learning materials, teaching-learning process, technology and media, and assessment in Industry 4.0 education. They also cover vocational education in the era in question and one section is devoted to Industrially disadvantaged societies. As these papers were presented at an internationally refereed conference dedicated to the advancement of theories and practices in education, they provide an opportunity for academics and professionals from various educational fields with cross-disciplinary interests to bridge the knowledge gap and promote research esteem and the evolution of pedagogy.

This book proposes essential methods, models, and case studies for Sustainable Logistics and Production in Industry 4.0. In addition to identifying and discussing various challenges and future prospects, it also features numerous case studies and quantitative research from different sectors. The authors (which include academics and managers) present insightful tips.
on the technical, organizational and social aspects of implementing Sustainable Logistics and Production in Industry 4.0. In today’s world, changes are coming faster and more unpredictably. Production is becoming more automated, computerized and complex. In short, Industry 4.0 is creating many new opportunities, but at the same time several new challenges. This book offers a valuable resource for all academics and practitioners who want to deepen their knowledge of Sustainable Logistics and Production in Industry 4.0.

This book has resulted from the activities of IFAC TC 5.2 “Manufacturing Modelling for Management and Control”. The book offers an introduction and advanced techniques of scheduling applications to cloud manufacturing and Industry 4.0 systems for larger audience. This book uncovers fundamental principles and recent developments in the theory and application of scheduling methodology to cloud manufacturing and Industry 4.0. The purpose of this book is to present recent developments in scheduling in cloud manufacturing and Industry 4.0 and to systemize these developments in new taxonomies and methodological principles to shape this new research domain. This book addresses the needs of both researchers and practitioners to uncover the challenges and opportunities of scheduling techniques’ applications to cloud manufacturing and Industry 4.0. For the first time, it comprehensively conceptualizes scheduling in cloud manufacturing and Industry 4.0 systems as a new research domain. The chapters of the book are written by the leading international experts and utilize methods of operations research, industrial engineering and computer science. Such a multi-disciplinary combination is unique and comprehensively deciphers major problem taxonomies, methodologies, and applications to scheduling in cloud manufacturing and Industry 4.0.

This book describes the next generation of industry—Industry 4.0—and how it holds the promise of increased flexibility in manufacturing, along with automation, better quality, and improved productivity. The authors discuss how it thus enables companies to cope with the challenges of producing increasingly individualized products with a short lead-time to market and higher quality. The authors posit that intelligent cloud services and resource sharing play an important role in Industry 4.0 anticipated Fourth Industrial Revolution. This book serves the different issues and challenges in cloud resource management CRM techniques with proper propped solution for IT organizations. The book features chapters based on the characteristics of autonomic computing with its applicability in CRM. Each chapter features the techniques and analysis of each mechanism to make better resource management in cloud.

This book will serve as an Industry 4.0 reference, guide, and engaging story for all those interested in the ASEAN regions promising manufacturing sectors. A gold mine of information for industrial engineers and business practitioners in ASEAN, as well as those with business and investment interests in the region. From students to national strategists, Industry 4.0: Navigating the Manufacturing Revolution in ASEAN is an essential guide to digital transformation. Industry 4.0 offers almost limitless opportunities but also serious challenges, for the various stakeholders in each of the diverse ASEAN markets. This book disseminates the fourth industrial revolution, explores the vast scope of Industry 4.0, and brings together two of the region's leading experts to guide readers through best practice and help them achieve their professional goals.

"Smart Sensor Networks (WSNs) using AI has left a mark on the lives of all by aiding in various sectors such as manufacturing, education, healthcare, and monitoring of the environment and industries. This book covers recent AI applications and explores aspects of modern sensor technologies and the systems needed to operate them. The book reviews the fundamental concepts of gathering, processing, and analysing different AI based models and methods. The book covers recent WSN techniques for the purpose of effective network management at par with the standards laid out by international organizations in related fields and focuses on both core concepts along with major applicational areas. The book will be used by technical
developers, academicians, data sciences, industrial professionals, researchers, and students interested in the latest innovations on problem-oriented processing techniques in sensor network using IoT and evolutionary computer applications for Industry 4.0"--

Business innovation and industrial intelligence are paving the way for a future in which smart factories, intelligent machines, networked processes and Big Data are combined to foster industrial growth. The maturity and growth of instrumentation, monitoring and automation as key technology drivers support Industry 4.0 as a viable, competent and actionable business model. This book offers a primer, helping readers understand this paradigm shift from industry 1.0 to industry 4.0. The focus is on grasping the necessary pre-conditions, development & technological aspects that conceptually describe this transformation, along with the practices, models and real-time experience needed to achieve sustainable smart manufacturing technologies. The primary goal is to address significant questions of what, how and why in this context, such as:What is Industry 4.0?What is the current status of its implementation?What are the pillars of Industry 4.0?How can Industry 4.0 be effectively implemented?How are firms exploiting the Internet of Things (IoT), Big Data and other emerging technologies to improve their production and services?How can the implementation of Industry 4.0 be accelerated?How is Industry 4.0 changing the workplace landscape?Why is this melding of the virtual and physical world needed for smart production engineering environments?Why is smart production a game-changing new form of product design and manufacturing?

This book offers a comprehensive reference guide for the theory and practice of intelligent and fuzzy techniques in Aviation 4.0. It provides readers with the necessary intelligent and fuzzy tools for Aviation 4.0 when incomplete, vague, and imprecise information or insufficient data exist in hand, where classical modeling approaches cannot be applied. The respective chapters, written by prominent researchers, explain a wealth of both basic and advanced concepts including baggage services, catering services, check-in and boarding services, maintenance and cargo management, security, etc. To foster reader comprehension, all chapters include relevant numerical examples or case studies. Taken together, they form an excellent reference guide for researchers, lecturers, and postgraduate students pursuing research on Aviation 4.0. Moreover, by extending all the main aspects of Aviation 4.0 to its intelligent and fuzzy counterparts, the book presents a dynamic snapshot of the field that is expected to stimulate new directions, ideas, and developments.

The purpose of this book is to provide an overview of the new industrial revolution: the "Industry 4.0." Globalization and competitiveness are forcing companies to review and improve their production processes. Industry 4.0 is a revolution that involves many different sectors and is still evolving. It represents the integration of tools already used in the past (big data, cloud, robot, 3D printing, simulation, etc.) that are now connected to a smart network by transmitting digital data at high speeds. The implementation of a 4.0 system represents a huge change for companies, which are faced with big investments. The idea of the book is to present practices, challenges, and opportunities related to the Industry 4.0. This book is intended to be a useful resource for anyone who deals with this issue.

Delve into industrial digital transformation and learn how to implement modern
Online Library Industry 4.0 Opportunities And Challenges Of The business strategies powered by digital technologies as well as organization and cultural optimization Key Features Identify potential industry disruptors from various business domains and emerging technologies Leverage existing resources to identify new avenues for generating digital revenue Boost digital transformation with cloud computing, big data, artificial intelligence (AI), and the Internet of Things (IoT) Book Description Digital transformation requires the ability to identify opportunities across industries and apply the right technologies and tools to achieve results. This book is divided into two parts with the first covering what digital transformation is and why it is important. The second part focuses on how digital transformation works. After an introduction to digital transformation, you will explore the transformation journey in logical steps and understand how to build business cases and create productivity benefit statements. Next, you’ll delve into advanced topics relating to overcoming various challenges. Later, the book will take you through case studies in both private and public sector organizations. You’ll explore private sector organizations such as industrial and hi-tech manufacturing in detail and get to grips with public sector organizations by learning how transformation can be achieved on a global scale and how the resident experience can be improved. In addition to this, you will understand the role of artificial intelligence, machine learning and deep learning in digital transformation. Finally, you’ll discover how to create a playbook that can ensure success in digital transformation. By the end of this book, you’ll be well-versed with industrial digital transformation and be able to apply your skills in the real world. What you will learn Get up to speed with digital transformation and its important aspects Explore the skills that are needed to execute the transformation Focus on the concepts of Digital Thread and Digital Twin Understand how to leverage the ecosystem for successful transformation Get to grips with various case studies spanning industries in both private and public sectors Discover how to execute transformation at a global scale Find out how AI delivers value in the transformation journey Who this book is for This book is for IT leaders, digital strategy leaders, line-of-business leaders, solution architects, and IT business partners looking for digital transformation opportunities within their organizations. Professionals from service and management consulting firms will also find this book useful. Basic knowledge of enterprise IT and some intermediate knowledge of identifying digital revenue streams or internal transformation opportunities are required to get started with this book. In this essential you will learn how to use the changed rules of the game of Industry 4.0 and discover patterns for new business models. Reinhard Ematinger shows you how to describe your current business model in a structured way, sketch and test new business models and define the benefits for existing and new customers. Real and current examples accompany you through this book and questions support you in the transfer to application in your organization. This Springer essential is a translation of the original German 1st edition essentials, Von der Industrie 4.0 zum Geschäftsmodell 4.0 by Reinhard Ematinger,
Industry 4.0 promises tremendous opportunities for industries to go green by leveraging virtual physical systems and internet driven technologies for a competitive advantage and set the platform for the factory of the future and smart manufacturing. The book provides measures that can be adopted by practicing design engineers, to develop products that will be sustainable in all stages of its life cycle. It helps organizations in implementation of sustainable manufacturing practices and formulation of critical strategies in their transition towards Industry 4.0., and the book will provide insights on ways of deploying these practices in correlation with the environmental benefits mapped to support the practicing managers and stakeholders. Features Assists in the understanding of the shifting paradigm in manufacturing sector towards smart and sustainable practices Showcases contemporary technologies and their insurgence in existing industries Focuses on need, applications, and implementation framework for Industry 4.0 Encapsulates all that one has to learn about sustainability and its transformation in Industry 4.0 Real time case studies are presented This book will serve as an Industry 4.0 reference, guide, and engaging story for all those interested in the ASEAN regions promising manufacturing sectors. A gold mine of information for industrial engineers and business practitioners in ASEAN, as well as those with business and investment interests in the region. From students to national strategists, Industry 4.0: Navigating the Manufacturing in ASEAN is an essential guide to digital transformation. Industry 4.0 offers almost limitless opportunities but also serious challenges, for the various stakeholders in each of the diverse ASEAN markets. This book disseminates the fourth industrial revolution, explores the vast scope of Industry 4.0, and brings together two of the region’s leading experts to guide readers through best practice and help them achieve their professional goals. Industry 4.0 for SMEsChallenges, Opportunities and Requirements Springer Nature This book presents selected papers from the 1st International Conference on Industry 4.0 and Advanced Manufacturing held at the Indian Institute of Science, Bangalore and includes deliberations from stakeholders in manufacturing and Industry 4.0 on the nature, needs, challenges, opportunities, problems, and solutions in these transformational areas. Special emphasis is placed on exploring avenues for creating a vision of, and enablers for, sustainable, affordable, and human-centric Industry 4.0. The book showcases cutting edge practice, research, and educational innovation in this crucial and rapidly evolving
area. This book will be useful to researchers in academia and industry, and will also be useful to policymakers involved in creating ecosystems for implementation of Industry 4.0.

Additive Manufacturing: A Tool for Industrial Revolution 4.0 explores the latest developments, underlying mechanisms, challenges and opportunities for 3D printing in a digital manufacturing environment. It uses an international panel of experts to explain how additive manufacturing processes have been successfully integrated with industry 4.0 technologies for increased technical capabilities, efficiency, flexibility and sustainability. The full manufacturing product cycle is addressed, including design, materials, mechanical properties, and measurement. Future directions for this important technological intersection are also explored. This book will interest researchers and industrial professionals in industrial engineering, digital manufacturing, advanced manufacturing, data science applications, and computer engineering. Addresses a wide range of additive manufacturing technology, including processes, controls and operation Explains many new and sustainable additive manufacturing methods Provides detailed descriptions on how to modernize and optimize conventional additive manufacturing methodologies in order to take full advantage of synergies with industry 4.0

The book discusses the opportunities and challenges of managing knowledge in the new reality of Industry 4.0. Addressing paradigmatic changes in value creation due to the development of digital technologies applied to manufacturing (additive manufacturing, IoT, robotics, etc.), it includes theoretical and empirical contributions on how Industry 4.0 technologies allow firms to create and exploit knowledge. The carefully selected expert contributions highlight the potential of these technologies in acquiring knowledge from a larger number of sources and examine approaches to innovation, organization of activities, and stakeholder development in the context of this next industrial revolution.

We are living in the middle of a Fourth Industrial Revolution, with new technology leading to dramatic shifts in everything from manufacturing to supply chain logistics. In a lively, developing field of academic, procurement is often neglected. Despite this, procurement plays a vital role, connecting the organization with its ecosystem. At a time of change and economic crisis, a new business model is called for, which this book aims to define. Based on the applications of Industry 4.0 concepts to procurement, this book describes Procurement 4.0 as a method and a set of tools, helping businesses to improve the value of their products, reduce waste, become more flexible, and address the business needs of the future. It will appeal to academics in the area, as well as practitioners.

Changes in the global economy bring new dynamics, concepts, and implications that require digitalization and adaptation. The new "normal" has changed, and companies must adopt such strategies if they want to survive in the ever-changing business environments. Business Management and Communication Perspectives in Industry 4.0 is a pivotal reference source that provides vital research on the planning, implementing, and evaluating of strategies for the new industry standards. While highlighting topics such as artificial intelligence, digital leadership, and management science, this publication theorizes about tomorrow’s business and communication environments based on the past and present of the concepts. This book is ideally designed for managers, researchers, educators, students, professionals, and policymakers seeking current research on blending managerial and communicational concepts with a multidisciplinary approach.

This book has a focus on the development and deployment of the Industrial Internet of Things (IIoT) paradigm, discussing frameworks, methodologies, benefits and limitations, as well as providing case studies of employing the IoT vision in the industrial domain. IIoT is becoming an attractive business reality for many organisations such as manufacturing, logistics, oil and gas, energy and other utilities, mining, aviation, and many more. The opportunities for this paradigm
are huge, and according to one report, the IIoT market is predicted to reach $125 billion by 2021. The driving philosophy behind the IIoT is that smart machines are better than humans at accurately capturing, analysing and communicating real-time data. The underlying technologies include distributed computing, machine learning, artificial intelligence, and machine-to-machine communication, with a typical IIoT system consisting of intelligent systems (applications, controllers, sensors, and security mechanisms), data communication infrastructure (cloud computing, edge computing, etc.), data analytics (to support business intelligence and corporate decision making), and most importantly the human element. The promised benefits of the IIoT include enhanced safety, better reliability, smart metering, inventory management, equipment tracking, and facilities management. There are, however, numerous issues that are also becoming the focus of active research, such as concerns regarding service availability, data security, and device communication. Lack of ubiquitous interoperability between heterogeneous devices is also a major concern. This book intends to fill a gap in the IIoT literature by providing the scientific contributions and latest developments from researchers and practitioners of international repute, focusing on frameworks, methodologies, benefits, and inherent issues/barriers to connected environments, especially in industrial settings. The intended audience includes network specialists, hardware engineers, and security experts who wish to adopt newer approaches for device connectivity, IoT security, and sensor-based devices design. University level students, researchers and practitioners will also find the latest innovation in technology and newer approaches relevant to the IIoT from a distributed computing perspective.

Manufacturing, like other industries, is rising to the challenges imposed by aggressive consumer demands and the need for cost-effective processing that delivers quality in the fastest possible time. Fierce competition means that keeping abreast of new developments and applications in technology is essential if companies are to meet demands profitably and keep ahead of competitors. This book investigates the design and management of digital manufacturing and assembly systems for an efficient, flexible, and modular production of customized products using the I40 (industry 4.0)-enabling technologies. This book will also provide case studies covering modeling, simulation, and optimization. eBook includes color figures. Discusses how the advancement of data communication and storage through the Internet of Things (IoT) opens the possibilities of connecting sensors, robots, and devices. Sheds light on how the human role in industry is decreasing due to the development of connected manufacturing floors, allowing them to take more control over the manufacturing processes, decisions, and even maintenance. Covers the benefits from exploiting digital manufacturing, manufacturing enterprises, and what they expect to achieve. Explains the important roles that modeling, simulation, and optimization play. Investigates the design and management of digital manufacturing and assembly systems for an efficient, flexible, and modular production of customized products exploiting the I40 (industry 4.0)-enabling technologies.

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