

Digital Business Ecosystem Patterns Architecture Blueprints For Applying IoT Blockchain And Data Analytics To Achieve Business Outcomes

[#digital business ecosystem](#) [#IoT blockchain data analytics](#) [#business outcomes](#) [#enterprise architecture blueprints](#) [#digital transformation strategy](#)

Explore comprehensive patterns and architecture blueprints for building a resilient digital business ecosystem. Learn how to strategically apply IoT, Blockchain, and Data Analytics to achieve significant business outcomes and drive successful digital transformation within your organization.

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Digital Business Ecosystem Patterns: Architecture Blueprints for Applying IoT, Blockchain and Data Analytics to Achieve Business Outcomes

These are both exciting and challenging times for today's business leaders. Advances in information technology (IT) have enabled new business capabilities that are stretching the limits of our imaginations. Robots, artificial intelligence (AI), drones and autonomous cars are part of our common vocabulary. The latest technologies, including the Internet of Things (IoT), blockchain, and machine learning are expected to transform many industries. Anticipated business outcomes include new revenue streams, reduced operating costs and more intimate customer relationships. The possibilities are endless, but for many organizations their digital business transformation is inhibited by: -Too much focus on technology and not enough on the business problem being solved. -High complexity of coordinating diverse technologies with multiple layers and integration points. -Weak foundations to build upon, including outdated legacy technologies and lack of skills. As the pace of innovation speeds up, new strategies are needed to succeed in the next big wave of business and technology change. This book identifies a fundamental change in how business systems are developed - describing an ecosystems approach for digital business solutions. It addresses the gap between the promise of new technology and its practical application. -It helps CEOs, CIO/CTOs, and Enterprise Architects develop a strategy for digital business leveraging today's advanced technologies like IoT, blockchain, and AI / machine learning. -It identifies how traditional organizations can leverage their current IT investments and partner with innovative start-ups to fill capability gaps. -It provides IT governance and security professionals with practical guidance for managing the risks of digital business. This book provides a catalog of digital business ecosystem patterns that address 10 common business problems faced by asset-intensive organizations including: asset tracking, asset maintenance, performance monitoring, usage metering,

automated inspections, dynamic marketplaces, alternative payment mechanisms, and the use of autonomous vehicles. The patterns are also applicable to delivering large-scale ecosystem solutions for smart city, smart farm, advanced health care, and modern factory initiatives.

Interdisciplinary Approaches to Digital Transformation and Innovation

Business approaches in today's society have become technologically-driven and highly-applicable within various professional fields. These business practices have transcended traditional boundaries with the implementation of internet technology, making it challenging for professionals outside of the business world to understand these advancements. Interdisciplinary research on business technology is required to better comprehend its innovations. Interdisciplinary Approaches to Digital Transformation and Innovation provides emerging research exploring the complex interconnections of technological business practices within society. This book will explore the practical and theoretical aspects of e-business technology within the fields of engineering, health, and social sciences. Featuring coverage on a broad range of topics such as data monetization, mobile commerce, and digital marketing, this book is ideally designed for researchers, managers, students, engineers, computer scientists, economists, technology designers, information specialists, and administrators seeking current research on the application of e-business technologies within multiple fields.

Business Information Systems Workshops

This book constitutes revised papers from the seven workshops and one accompanying event which took place at the 21st International Conference on Business Information Systems, BIS 2018, held in Berlin, Germany, in July 2018. Overall across all workshops, 58 out of 122 papers were accepted. The workshops included in this volume are: AKTB 2018 - 10th Workshop on Applications of Knowledge-Based Technologies in Business BITA 2018 - 9th Workshop on Business and IT Alignment BSCT 2018 - 1st Workshop on Blockchain and Smart Contract Technologies IDEA 2018 - 4th International Workshop on Digital Enterprise Engineering and Architecture IDEATE 2018 - 3rd Workshop on Big Data and Business Analytics Ecosystems SciBOWater 2018 - Scientific Challenges & Business Opportunities in Water Management QOD 2018 - 1st Workshop on Quality of Open Data In addition, one keynote speech in full-paper length and contributions from the Doctoral Consortium are included

Blockchain Applications in IoT Ecosystem

This book focuses on the fundamentals of blockchain technology along with the means and methods of its integration with Internet of Things (IoT). The book allows the reader to have a deeper understanding of blockchain technology, IoT and various application areas wherein both technologies can be implemented. The book serves the purpose of providing knowledge about the fundamentals of blockchain and IoT to a common reader along with allowing a research scholar to identify some futuristic problem areas that emerge from the convergence of both technologies. Furthermore, the authors discuss relevant application areas such as smart city, e-healthcare, smart travel, etc. throughout the course of the book. The book also talks through a few case studies illustrating the implementation and benefits of using blockchain and IoT. Provides a comprehensive view of blockchain technology and its integration with IoT; Facilitates in having a valuable understanding of various application areas pertaining to blockchain and IoT; Assists the reader in exploring new research areas wherein blockchain and IoT can find their applicability based upon their list of benefits.

Digital Business Strategies in Blockchain Ecosystems

This book analyzes the effects of the latest technological advances in blockchain and artificial intelligence (AI) on business operations and strategies. Adopting an interdisciplinary approach, the contributions examine new developments that change the rules of traditional management. The chapters focus mainly on blockchain technologies and digital business in the "Industry 4.0" context, covering such topics as accounting, digitalization and use of AI in business operations and cybercrime. Intended for academics, blockchain experts, students and practitioners, the book helps business strategists design a path for future opportunities.

IoT Standards with Blockchain

Implement a standardized end-to-end IoT implementation based on best practices and proven successes in IoT across multiple industries. With this book you'll discover the three business strategies

for enterprises to adopt and remain relevant in the marketplace -the Customer Engagement strategy, the Business Transformation strategy, and the Business Productivity Improvement strategy. Pick the right strategy for your enterprise to ensure a clear mission and vision is established based on which IoT roadmap can be defined. Subsequently all business processes pertaining to the chosen business strategy are investigated to define use cases where IoT can be adopted to achieve that business strategy. Start by learning the generic industry perspective on digital transformation using IoT. Then move on to the IoT Standards Reference Model. It's an abstract framework consisting of an interlinked set of clearly defined components for enterprises to successfully implement an IoT solution. The IoT Standards Reference Model can be applied for IoT use cases across any industry and is kept abstract in order to enable many, potentially different, IoT architectures to be implemented based on the model. With IoT thoroughly covered, you'll dive into Blockchain and AI technology. This book will discuss the importance of using private blockchains for IoT use cases. You'll also discover the five IoT-Blockchain implementation patterns that enterprises can enable for seamless communication between IoT devices, IoT Smart Gateways, and IoT platforms. These patterns help achieve trust, interoperability, and extendibility. Then you'll work with AI and the IoT Standards Reference Model. The reference model recommends applying AI patterns to generate insights from data and take appropriate actions automatically. IoT Standards with Blockchain also provides perspective on how and when to apply AI in an IoT Context. In the end, you'll have a solid methodology to execute large scale, enterprise-level IoT implementations. You'll have an enterprise digital transformation framework for IoT that will enable your enterprise to operate better. You will: Facilitate IoT interoperability with best practices Implement IoT platform security Feed data and analytics to AI models.

Blockchain in Data Analytics

Blockchain technology facilitates a decentralized database where business is rendered transparent without the involvement of middlemen. The first use of this technology was its application in digital currency (bitcoin). However, other potential uses of blockchain are yet to be explored. It is expected to have a major impact on cyber security, the internet of things, supply chain management, market prediction, governance, information management, and financial transactions, among others. Blockchain has redesigned the way in which people deal with their money due to its effectiveness, especially in terms of security. Therefore, from the data analytics point of view, investigation of the application of blockchain technology in a wide range of domains is crucial. In this context, this book provides a broad picture of the concepts, techniques, applications, and open research directions in this area, and will serve as a single source of reference for acquiring knowledge on this emerging technology.

Blockchain for Business

The Pragmatic Guide to Driving Value and Disrupting Markets with Blockchain "Blockchain's potential to transform businesses has generated a tremendous amount of excitement across industries. However, it can be difficult for decision makers to develop a practical approach to blockchain for their specific business requirements. By identifying and clearly describing the value of blockchain for enterprises, as well as the processes required to harness blockchain to achieve business objectives, Blockchain for Business presents a startlingly concise yet comprehensive roadmap for business leaders. This book is an excellent resource for anyone looking to leverage blockchain to transform their business." —Dr. Won-Pyo Hong, President & CEO of Samsung SDS "Much has been written about blockchain in the past few years: what it is and what it is not (at various levels of detail), as well as the technology's long-term strategic value for companies, industries, and economies. However, what we've been missing is a practical, operational, 'how to' set of steps for creating, implementing, and operating a blockchain-based solution. This book aims to fill that gap. It's an invaluable tool for anyone ready to take the plunge and start taking advantage of this remarkable technology." —Irving Wladawsky-Berger, research affiliate, MIT; columnist, WSJ CIO Journal; VP Emeritus, IBM "I will never be able to adequately express how useful this book will be to my class. In addition the great chapters on cybersecurity, I loved the Integration Models, especially 'Coexistence with Systems of Record.' Legacy integration with Blockchain is a critical barrier, and you nailed it!" —Thomas Doty, JD, LL.M. - Adjunct Professor, University of New Hampshire Law Blockchain enables enterprises to reinvent processes and business models and to pursue radically disruptive applications. Blockchain for Business is a concise, accessible, and pragmatic guide to both the technology and the opportunities it creates. Authored by three experts from IBM's Enterprise Blockchain practice, it introduces industry-specific and cross-industry use cases, and reviews best-practice approaches to planning and delivering blockchain projects. With a relentless focus on real-world business outcomes, the authors reveal what blockchain can do, what it can't do

yet, and where it's headed. Understand five elements that make blockchain so disruptive: transparency, immutability, security, consensus, and smart contracts Explore key use cases: cross-border payments, food and drug safety, provenance, trade finance, clinical trials, land registries, and more See how trusted blockchain networks are facilitating entirely new business models Compare blockchain types: permissioned, permissionless, private, public, federated, and hybrid Anticipate key technical, business, regulatory, and governance challenges Build blockchain financial models, investment rubrics, and risk frameworks Organize and manage teams to transform blockchain plans into reality Whether you're a senior decision maker, technical professional, customer, or investor, Blockchain for Business will help you cut through the hype and objectively assess blockchain's potential in your business. Register your product for convenient access to downloads, updates, and/or corrections as they become available.

Building Digital Ecosystem Architectures

The design of digital solutions has become a pressing concern for practitioners faced with a plethora of technology impacting their business. From cloud computing to social networks, mobile computing and big data, to the emerging of Internet of things, all of which are changing how enterprise products, services, rooms and buildings are connected to the wider ecosystem of networks and services. This book defines digital ecosystems with examples from real industry cases and explores how enterprise architecture is evolving to enable physical and virtual, social, and material object collaboration and experience. The key topics covered include: Concepts of digitization Types of technological ecosystems Architecting digital workspaces Principles of architecture design Examples architecting digital business models Examples of digital design patterns Methods of monetization Conclusions

Secure and Smart Internet of Things (IoT)

By 2020, experts forecast that up to 28 billion devices will be connected to the Internet, with only one third of them being computers, smartphones, smartwatches, and tablets. The remaining two thirds will be other "devices" – sensors, terminals, household appliances, thermostats, televisions, automobiles, production machinery, urban infrastructure and many other "things", which traditionally have not been Internet enabled. This "Internet of Things" (IoT) represents a remarkable transformation of the way in which our world will soon interact. Much like the World Wide Web connected computers to networks, and the next evolution mobile devices connected people to the Internet and other people, IoT looks poised to interconnect devices, people, environments, virtual objects and machines in ways that only science fiction writers could have imagined. In a nutshell the Internet of Things (IoT) is the convergence of connecting people, things, data and processes; it is transforming our life, business and everything in between. Secure and Smart IoT explores many aspects of the Internet of Things and explains many of the complicated principles of IoT and the new advancements in IoT including using Fog Computing, AI and Blockchain technology.

Blockchain Cybersecurity, Trust and Privacy

This book provides the reader with the most up-to-date knowledge of blockchain in mainstream areas of security, trust, and privacy in the decentralized domain, which is timely and essential (this is due to the fact that the distributed and P2P applications is increasing day-by-day, and the attackers adopt new mechanisms to threaten the security and privacy of the users in those environments). This book also provides the technical information regarding blockchain-oriented software, applications, and tools required for the researcher and developer experts in both computing and software engineering to provide solutions and automated systems against current security, trust and privacy issues in the cyberspace. Cybersecurity, trust and privacy (CTP) are pressing needs for governments, businesses, and individuals, receiving the utmost priority for enforcement and improvement in almost any societies around the globe. Rapid advances, on the other hand, are being made in emerging blockchain technology with broadly diverse applications that promise to better meet business and individual needs. Blockchain as a promising infrastructural technology seems to have the potential to be leveraged in different aspects of cybersecurity promoting decentralized cyberinfrastructure. Blockchain characteristics such as decentralization, verifiability and immutability may revolve current cybersecurity mechanisms for ensuring the authenticity, reliability, and integrity of data. Almost any article on the blockchain points out that the cybersecurity (and its derivatives) could be revitalized if it is supported by blockchain technology. Yet, little is known about factors related to decisions to adopt this technology, and how it can systemically be put into use to remedy current CTP's issues in the digital world. Topics of interest for this book include but not limited to: Blockchain-based authentication, authorization

and accounting mechanisms Applications of blockchain technologies in digital forensic and threat hunting Blockchain-based threat intelligence and threat analytics techniques Formal specification of smart contracts Automated tools for outsmarting smart contracts Security and privacy aspects of blockchain technologies Vulnerabilities of smart contracts Blockchain for securing cyber infrastructure and internet of things networks Blockchain-based cybersecurity education systems This book provides information for security and privacy experts in all the areas of blockchain, cryptocurrency, cybersecurity, forensics, smart contracts, computer systems, computer networks, software engineering, applied artificial intelligence for computer security experts, big data analysts, and decentralized systems. Researchers, scientists and advanced level students working in computer systems, computer networks, artificial intelligence, big data will find this book useful as well.

Collaborative Value Co-creation in the Platform Economy

This book offers a service science perspective on platform orchestration and on collaborative consumption, providing an overview of research topics related to service dominant logic in multi-sided markets. The chapters give an international and multi-disciplinary overview of the current topics of digital service platforms from many angles. This overview helps in filling the gap between service science and recent research of the platform economy and paves the way for future service platform research. Open standards and distributed databases such as blockchain configurations increase the connectivity of business ecosystems as devices and systems exchange data with each other instead of through intermediaries. This exchange opens up opportunities for new value constellations, makes services globally scalable, and connects local service systems as integrated systems of systems. The book brings together established academics from a number of disciplines. This collaboration makes it possible to provide novel constructs and empirical results that help the reader to understand how value is co-created and orchestrated in the era of digital service platforms. In addition to theory building, practical implications for wider managerial and policy use are highlighted. The topics in this book are related to service platform technologies; organizational capabilities; and strategies and management in the contexts of retail, healthcare, and the public sector. A wide selection of case studies is used to demonstrate the implications of platforms for different service and economic contexts. Combining both theory and practice, this book is highly recommended for readers interested in the service and marketing point of view on the platform economy and for practitioners strategizing for scalable service platforms. Chapters 4 and 10 are available open access under a Creative Commons Attribution 4.0 International License via link.springer.com.

Big Data and Blockchain for Service Operations Management

This book aims to provide the necessary background to work with big data blockchain by introducing some novel applications in service operations for both academics and interested practitioners, and to benefit society, industry, academia, and government. Presenting applications in a variety of industries, this book intends to cover theory, research, development, and applications of big data and blockchain, as embedded in the fields of mathematics, engineering, computer science, physics, economics, business, management, and life sciences, to help service operations management.

Business Information Systems

This book constitutes the proceedings of the 21st International Conference on Business Information Systems, BIS 2018, held in Berlin, Germany, in July 2018. The BIS conference follows popular research trends, both in the academic and the business domain. Thus the theme of BIS 2018 was "Digital Transformation - An Imperative in Today's Business Markets". The 30 papers presented in this volume were carefully reviewed and selected from 96 submissions. They were organized in topical sections named: big and smart data and artificial intelligence; business and enterprise modeling; ICT project management; process management; smart infrastructures; social media and Web-based business information systems; applications, evaluations, and experiences.

Blockchain Applied

Blockchain is the popular name given to the exciting, evolving world of distributed ledger technology (DLT). Blockchains offer equitable and secure access to data, as well as transparency and immutability. Organisations can decide to use blockchain to upgrade whatever ledgers they are currently deploying (for example, relational databases, spreadsheets and cumbersome operating models) for their data and technology stack in terms of books and records, transactions, storage, production services and

in many other areas. This book describes the applied use of blockchain technology in the enterprise world. Written by two expert practitioners in the field, the book is in two main parts: (1) an introduction to the history of, and a critical context explainer about, the emergence of blockchain written in natural language and providing a tour of the features, functionality and challenges of blockchain and DLT; and (2) a series of six applied organisational use cases in (i) trade finance, (ii) healthcare, (iii) retail savings & investments, (iv) real estate, (v) central bank digital currencies (CBDC) and (vi) fund management that offer the reader a straightforward, easy-to-read comparison between 'old world' technology (such as platforms, people and processes) versus what blockchain ledgers offer to enterprises and organisations in terms of improved efficiency, performance, security and access to business data. Blockchain is sometimes tainted by association to Bitcoin, Onecoin and others. But as cryptocurrencies and stock markets continue to rise and fall with volatility and the world economy emerges changed by coronavirus, working from home and the threat of inflation, many enterprises, organisations and governments are looking again at the powerful features of blockchain and wondering how DLT may help them adapt. This book is an ideal introduction to the practical and applied nature of blockchain and DLT solutions for business executives, business students, managers, C-suite senior leaders, software architects and policy makers and sets out, clearly and professionally, the benefits and challenges of the actual business applications of blockchain.

Practical Artificial Intelligence and Blockchain

Learn how to use AI and blockchain to build decentralized intelligent applications (DIApps) that overcome real-world challenges

Key Features

- Understand the fundamental concepts for converging artificial intelligence and blockchain
- Apply your learnings to build apps using machine learning with Ethereum, IPFS, and Moibit
- Get well-versed with the AI-blockchain ecosystem to develop your own DIApps

Book Description

AI and blockchain are two emerging technologies catalyzing the pace of enterprise innovation. With this book, you'll understand both technologies and converge them to solve real-world challenges. This AI blockchain book is divided into three sections. The first section covers the fundamentals of blockchain, AI, and affiliated technologies, where you'll learn to differentiate between the various implementations of blockchains and AI with the help of examples. The second section takes you through domain-specific applications of AI and blockchain. You'll understand the basics of decentralized databases and file systems and connect the dots between AI and blockchain before exploring products and solutions that use them together. You'll then discover applications of AI techniques in crypto trading. In the third section, you'll be introduced to the DIApp design pattern and compare it with the DApp design pattern. The book also highlights unique aspects of SDLC (software development lifecycle) when building a DIApp, shows you how to implement a sample contact tracing application, and delves into the future of AI with blockchain. By the end of this book, you'll have developed the skills you need to converge AI and blockchain technologies to build smart solutions using the DIApp design pattern. What you will learn

- Get well-versed in blockchain basics and AI methodologies
- Understand the significance of data collection and cleaning in AI modeling
- Discover the application of analytics in cryptocurrency trading
- Get to grips with open, permissioned, and private blockchains
- Explore the DIApp design pattern and its merit in digital solutions
- Find out how LSTM and ARIMA can be applied in crypto trading
- Use the DIApp design pattern to build a sample contact tracing application
- Get started with building your own DIApps across various domains

Who this book is for

This book is for blockchain and AI architects, developers, data scientists, data engineers, and evangelists who want to harness the power of artificial intelligence in blockchain applications. If you are looking for a blend of theoretical and practical use cases to understand how to implement smart cognitive insights into blockchain solutions, this book is what you need! Knowledge of machine learning and blockchain concepts is required.

IoT, AI, and Blockchain for .NET

Create applications using Industry 4.0. Discover how artificial intelligence (AI) and machine learning (ML) capabilities can be enhanced using the Internet of things (IoT) and secured using Blockchain, so your latest app can be not just smarter but also more connected and more secure than ever before. This book covers the latest easy-to-use APIs and services from Microsoft, including Azure IoT, Cognitive Services APIs, Blockchain as a Service (BaaS), and Machine Learning Studio. As you work through the book, you'll get hands-on experience building an example solution that uses all of these technologies—an IoT suite for a smart healthcare facility. Hosted on Azure and networked using Azure IoT, the solution includes centralized patient monitoring, using Cognitive Services APIs for face detection, recognition, and tracking. Blockchain is used to create trust-based security and inventory

management. Machine learning is used to create predictive solutions to proactively improve quality of life. By the end of the book, you'll be confident creating richer and smarter applications using these technologies. What You'll Learn Know the technologies underpinning Industry 4.0 and AI 2.0 Develop real-time solutions using IoT in Azure Bring the smart capabilities of AI 2.0 into your application using a simple API call Host and manage your solution on Azure Understand Blockchain as a Service Capture and analyze data on the fly Make predictions using existing data Who This Book Is For Novice and intermediate .NET developers and architects who want to learn what it takes to create a modern or next-generation application

Blockchain Applications in IoT Security

Like many other scientific innovations, scientists are looking to protect the internet of things (IoT) from unfortunate losses, theft, or misuse. As one of the current hot trends in the digital world, blockchain technology could be the solution for securing the IoT. Blockchain Applications in IoT Security presents research for understanding IoT-generated data security issues, existing security facilities and their limitations and future possibilities, and the role of blockchain technology. Featuring coverage on a broad range of topics such as cryptocurrency, remote monitoring, and smart computing, this book is ideally designed for security analysts, IT specialists, entrepreneurs, business professionals, academicians, researchers, students, and industry professionals seeking current studies on the limitations and possibilities behind competitive blockchain technologies.

Implementing and Leveraging Blockchain Programming

This book gives a comprehensive overview of blockchain programming and its implementation in the wide range of blockchain-based applications such as cross-border payment, digital banking, and digital identities. The consistent thrive of the blockchain phenomenon and the ecosystem of e-business use cases have led to the Industrial Revolution in the e-business world, and it is demonstrated in this book. The digital advancement, interference, and transformation being brought through the influence of the blockchain advancements are creating waves across e-business verticals. The book caters to academics, industrial practitioners, and entrepreneurs working in the field of blockchain technology and programming.

Blockchain for Business

The book focuses on the power of business blockchain. It gives an overview of blockchain in traditional business, marketing, accounting and business intelligence. The book provides a detailed working knowledge of blockchain, user cases of blockchain in business, cryptocurrency and Initial Coin Offering (ICO) along with the risks associated with them. The book also covers the detailed study of decentralization, mining, consensus, smart contracts, concepts and working of distributed ledgers and hyper ledgers as well as many other important concepts. It also details the security and privacy aspects of blockchain. The book is beneficial for readers who are preparing for their business careers, those who are working with small scale businesses and startups, and helpful for business executives, managers, entrepreneurs, bankers, government officials and legal professionals who are looking to blockchain for secure financial transactions. The book will also be beneficial for researchers and students who want to study the latest developments of blockchain.

Internet of Things, Artificial Intelligence and Blockchain Technology

This book explores the concepts and techniques of IoT, AI, and blockchain. Also discussed is the possibility of applying blockchain for providing security in various domains. The specific highlight of this book is focused on the application of integrated technologies in enhancing data models, better insights and discovery, intelligent predictions, smarter finance, smart retail, global verification, transparent governance, and innovative audit systems. The book allows both practitioners and researchers to share their opinions and recent research in the convergence of these technologies among academicians and industry people. The contributors present their technical evaluation and compare it with existing technologies. Theoretical explanation and experimental case studies related to real-time scenarios are also included. This book pertains to IT professionals, researchers and academicians working on fourth revolution technologies.

Blockchain for Big Data

In recent years, the fast-paced development of social information and networks has led to the explosive growth of data. A variety of big data have emerged, encouraging researchers to make business decisions by analysing this data. However, many challenges remain, especially concerning data security and privacy. Big data security and privacy threats permeate every link of the big data industry chain, such as data production, collection, processing, and sharing, and the causes of risk are complex and interwoven. Blockchain technology has been highly praised and recognised for its decentralised infrastructure, anonymity, security, and other characteristics, and it will change the way we access and share information. In this book, the author demonstrates how blockchain technology can overcome some limitations in big data technology and can promote the development of big data while also helping to overcome security and privacy challenges. The author investigates research into and the application of blockchain technology in the field of big data and assesses the attendant advantages and challenges while discussing the possible future directions of the convergence of blockchain and big data. After mastering concepts and technologies introduced in this work, readers will be able to understand the technical evolution, similarities, and differences between blockchain and big data technology, allowing them to further apply it in their development and research. Author: Shaoliang Peng is the Executive Director and Professor of the College of Computer Science and Electronic Engineering, National Supercomputing Centre of Hunan University, Changsha, China. His research interests are high-performance computing, bioinformatics, big data, AI, and blockchain.

Blockchain: Empowering Digital Economy

Big data has been upgraded to our national strategy and has become a catalyst for national and local economic development. With the further promotion of big data and artificial intelligence (AI), the new business model needs to optimize and upgrade. The integration of the blockchain industry will fully implement the digital China strategy and promote the application of big data in China. This unique compendium gives a comprehensive understanding of the blockchain content through the path of technological innovation. It enables readers to fully understand the role of blockchain in promoting the digital economy. The volume will be a useful reference guide for relevant personnel in state ministries and commissions, state-owned enterprises, big data, AI, as well as teachers, researchers and students in higher education institutions.

Convergence of Internet of Things and Blockchain Technologies

This book presents chapters from diverse range of authors on different aspects of how Blockchain and IoT are converging and the impacts of these developments. The book provides an extensive cross-sectional and multi-disciplinary look into this trend and how it affects artificial intelligence, cyber-physical systems, and robotics with a look at applications in aerospace, agriculture, automotive, critical infrastructures, healthcare, manufacturing, retail, smart transport systems, smart cities, and smart healthcare. Cases include the impact of Blockchain for IoT Security; decentralized access control systems in IoT; Blockchain architecture for scalable access management in IoT; smart and sustainable IoT applications incorporating Blockchain, and more. The book presents contributions from international academics, researchers, and practitioners from diverse perspectives. Presents how Blockchain and IoT are converging and the impacts of these developments on technology and its application; Discusses IoT and Blockchain from cross-sectional and multi-disciplinary perspectives; Includes contributions from researchers, academics, and professionals from around the world.

Data Analytics and Digital Transformation

Understanding the significance of data analytics is paramount for digital transformation but in many organizations they are separate units without fully aligned goals. As organizations are applying digital transformations to be adaptive and agile in a competitive environment, data analytics can play a critical role in their success. This book explores the crossroads between them and how to leverage their connection for improved business outcomes. The need to collaborate and share data is becoming an integral part of digital transformation. This not only creates new opportunities but also requires well-considered and continuously assessed decision-making as competitiveness is at stake. This book details approaches, concepts, and frameworks, as well as actionable insights and good practices, including combined data management and agile concepts. Critical issues are discussed such as data quality and data governance, as well as compliance, privacy, and ethics. It also offers insights into how both private and public organizations can innovate and keep up with growing data volumes and increasing technological developments in the short, mid, and long term. This book will be of direct

appeal to global researchers and students across a range of business disciplines, including technology and innovation management, organizational studies, and strategic management. It is also relevant for policy makers, regulators, and executives of private and public organizations looking to implement successful transformation policies.

Business Information Systems Workshops

This book constitutes revised papers from the nine workshops and one accompanying event which took place at the 22nd International Conference on Business Information Systems, BIS 2019, held in Seville, Spain, in June 2019. There was a total of 139 submissions to all workshops of which 57 papers were accepted for publication. The workshops included in this volume are: AKTB 2019: 11th Workshop on Applications of Knowledge-Based Technologies in Business BITA 2019: 10th Workshop on Business and IT Alignment BSCT 2019: Second Workshop on Blockchain and Smart Contract Technologies DigEX 2019: First International Workshop on transforming the Digital Customer Experience iCRM 2019: 4th International Workshop on Intelligent Data Analysis in Integrated Social CRM iDEATE 2019: 4th Workshop on Big Data and Business Analytics Ecosystems ISMAD 2019: Workshop on Information Systems and Applications in Maritime Domain QOD 2019: Second Workshop on Quality of Open Data SciBOWater 2019: Second Workshop on Scientific Challenges and Business Opportunities in Water Management

Advances in E-Business Engineering for Ubiquitous Computing

This book presents the latest trends in scientific methods and enabling technologies to advance e-business. It consists of selected high-quality papers from the 16th International Conference on E-Business Engineering (ICEBE 2019), held in Shanghai, China, on 11–13 October 2019. ICEBE is a leading international forum for researchers, engineers, and business specialists to exchange cutting-edge ideas, findings, and experiences in the field of e-business. The book covers a range of topics, including agents for e-business, big data for e-business, Internet of Things, mobile and autonomous computing, security/privacy/trust, service-oriented and cloud computing, software engineering, blockchain, and industry applications.

Blockchain, Big Data and Machine Learning

Present book covers new paradigms in Blockchain, Big Data and Machine Learning concepts including applications and case studies. It explains dead fusion in realizing the privacy and security of blockchain based data analytic environment. Recent research of security based on big data, blockchain and machine learning has been explained through actual work by practitioners and researchers, including their technical evaluation and comparison with existing technologies. The theoretical background and experimental case studies related to real-time environment are covered as well. Aimed at Senior undergraduate students, researchers and professionals in computer science and engineering and electrical engineering, this book: Converges Blockchain, Big Data and Machine learning in one volume. Connects Blockchain technologies with the data centric applications such Big data and E-Health. Easy to understand examples on how to create your own blockchain supported by case studies of blockchain in different industries. Covers big data analytics examples using R. Includes Illustrative examples in python for blockchain creation.

Blockchain Intelligent Systems

Blockchain provides an environment where technologies converge to provide numerous benefits. However, there are still many problems ahead, and changes are required at all levels - technology, algorithms, and human-computer interaction for widespread acceptance of blockchain intelligence systems. This book reviews blockchain technology and the current developments in research and business applications. It explores the real-time applications and issues that will bring the synergy needed to materialize the goal of blockchain intelligence. Researchers in various fields such as Blockchain, Data Analysis, IoT, Data Science, Crypto currencies will find this book useful. Students and professionals working on Blockchain in artificial intelligence, IoT, Healthcare, Robotics, Soft computing, and Data science will also benefit from this. It offers a realistic and thorough introduction that supports programmers, students and researchers in other disciplines. The book comprises chapters dealing with various issues, to provide readers with greater readability, versatility and adaptability.

Blockchain Applications for Secure IoT Frameworks: Technologies Shaping the Future

This reference presents information about different facets of IoT and blockchain systems that have been recently proposed for practical situations. Chapters provide knowledge about how these technologies are applied in functions related to trust management, identity management, security threats, access control and privacy. Key Features: - Introduces the reader to fundamental concepts of IoT and blockchain technology - reports advances in the field of IoT, ubiquitous computing and blockchain computing - includes the applications of different frameworks - explains the role of blockchains in improving IT security - provides examples of smart grids, data transmission models, digital business platforms, agronomics and big data solutions - Includes references for further reading Blockchain Applications for Secure IoT Frameworks Technologies Shaping the Future is a handy reference for information technology professionals and students who want updated information about applications of IoT and blockchains in secure operational and business processes.

Blockchain in e-Governance

Blockchain: Preferred technology that the world is looking for! KEY FEATURES _ Understand the design elements of an enterprise Blockchain and National Blockchain backbone framework and the steps involved in implementing the same. _ Prominent use cases across different domain, in different countries. _ Examine how Blockchain is used by leading countries like Estonia, Thailand, Dubai etc.. and how it can be leveraged to improve significantly the experience of citizens in availing Government services like citizen records, civil supplies, Land records , Smart city services and many more. DESCRIPTION We are increasingly faced with several new technologies like IOT, AI & Analytics, Machine learning, 3D printing, AR/VR, Robotics, Drones making inroads into several areas of our corporate & personal lives. All these technologies are offering an unprecedented level of automation that is augmenting our performance & lifestyles as well. As these technologies are leveraging the centralised approach of aggregation & economies of scale to facilitate efficiencies that provide a high level of training data, these are also increasingly becoming vulnerable to sophisticated cyber-attacks from actors searching for lucrative targets, to hold them at ransom. Given this, How are we supposed to safeguard burgeoning investments into cutting-edge intelligent analytics driven investments of Industry 4.0? Enters Blockchain with its potential of decentralisation and cryptographically protected and distributed ledgers that provide a mechanism to nullify the action Cybercriminals and their attacks. By eliminating Single points of failure that are resident in Centralised era, Blockchain seems to be the preferred technology that the world is looking for! WHAT YOU WILL LEARN Blockchain the underlying technology that pioneered Bitcoin and resultant innovations in Global Payments industry has made its impact much beyond the core finance domain it transformed initially. Blockchain, one of the latest in the disruptive technologies is seeing a surge in adoption owing to adoption by Start-ups.. There is a need to come out with a systemic thinking approach to leverage this new paradigm. Hence, let us delve into design thinking approach to solve the problems using Blockchain. WHO THIS BOOK IS FOR Book will take a look at the Global adoption and implementation aspects & their challenges. This book will be very useful to Blockchain Subject Matter Experts, Consultants, CXOs and Government officials and one who is interested in exploring blockchain technology. It will appeal to Developers, Architects, Technology Managers and Executives who wish to build new or transform their existing applications to a blockchain based system to gain efficiencies in Cost, Scalability, Security and Robustness. TABLE OF CONTENTS 1. Blockchain- A Primer 2. Blockchain Platforms for Real life Applications 3.Types of Problems Blockchain can solve 4. Design Thinking & Blockchain Solution design 5. Blockchain and Governments- Examples and Case studies 6. Blockchain Countries 7. Key Government applications of Blockchain 8. Blockchain Application patterns for Integration and Interoperability 9. Applying Design Thinking to Blockchain 10. Desirable elements in a Blockchain Consortium 11. Implementation of Blockchain projects by Governments 12. Designing a Blockchain Project- Case study 13. Challenges and Limitations of implementing Blockchain solutions 14. Encouraging Blockchain adoption & Educating the new generation for adoption

Convergence of Blockchain, AI and IoT

Convergence of Blockchain, AI and IoT: A Digital Platform discusses the convergence of three powerful technologies that play into the digital revolution and blur the lines between biological, digital, and physical objects. This book covers novel algorithms, solutions for addressing issues in applications, security, authentication, and privacy. Discusses innovative technological upgradation and significant challenges in the current era Gives an overview of clinical scientific research that enables smart diagnosis through artificial intelligence Provides an insight into how disruptive technology enabled with

the self-running devices and protection mechanism is involved in an augmented reality with blockchain mechanism Talks about neural science being capable of enhancing deep brain waves to predict an overall improvement in human thoughts and behaviours Covers the digital currency mechanism in detail Enhances the knowledge of readers about smart contract and ledger mechanism with artificial intelligence and blockchain mechanism Targeted audiences range from those interested in the technical revolution of blockchain, big data and the Internet of Things, to research scholars and the professional market.

Fusing Big Data, Blockchain and Cryptocurrency

As technology continues to revolutionise today's economy, Big Data, Blockchain and Cryptocurrency are rapidly transforming themselves into mainstream functions within the financial services industry. This book examines each concept individually, analysing the opportunities and challenges they bring and exploring the potential for future development. The authors further evaluate the fusion of these three important products of the FinTech revolution, illustrating their combined influence on the digital economy. Providing a comprehensive analysis of three innovative technologies, this timely book will appeal to scholars researching innovation in the finance industry and financial services technology more specifically.

Blockchain, Internet of Things, and Artificial Intelligence

Blockchain, Internet of Things, and Artificial Intelligence provides an integrated overview and technical description of the fundamental concepts of blockchain, IoT, and AI technologies. State-of-the-art techniques are explored in depth to discuss the challenges in each domain. The convergence of these revolutionized technologies has leveraged several areas that receive attention from academicians and industry professionals, which in turn promotes the book's accessibility more extensively. Discussions about an integrated perspective on the influence of blockchain, IoT, and AI for smart cities, healthcare, and other business sectors illuminate the benefits and opportunities in the ecosystems worldwide. The contributors have focused on real-world examples and applications and highlighted the significance of the strengths of blockchain to transform the readers' thinking toward finding potential solutions. The faster maturity and stability of blockchain is the key differentiator in artificial intelligence and the Internet of Things. This book discusses their potent combination in realizing intelligent systems, services, and environments. The contributors present their technical evaluations and comparisons with existing technologies. Theoretical explanations and experimental case studies related to real-time scenarios are also discussed. FEATURES Discusses the potential of blockchain to significantly increase data while boosting accuracy and integrity in IoT-generated data and AI-processed information Elucidates definitions, concepts, theories, and assumptions involved in smart contracts and distributed ledgers related to IoT systems and AI approaches Offers real-world uses of blockchain technologies in different IoT systems and further studies its influence in supply chains and logistics, the automotive industry, smart homes, the pharmaceutical industry, agriculture, and other areas Presents readers with ways of employing blockchain in IoT and AI, helping them to understand what they can and cannot do with blockchain Provides readers with an awareness of how industry can avoid some of the pitfalls of traditional data-sharing strategies This book is suitable for graduates, academics, researchers, IT professionals, and industry experts.

Emerging Technologies

The convergence of blockchain and Internet of things (IoT) powered by data and artificial intelligence (AI) is on the agenda of several big companies and some of them have already started using its implementations, initiatives, and solutions in various projects. In this book, the author calls the convergence of these three technologies: the blockchain of intelligent things. This book is targeted to help a broad audience, including anyone interested in and responsible for vision, projects, and implementations of blockchain, IoT, and AI in medium-sized companies and large enterprises. This would include business and technology managers, IT professionals, and last but not least, business or technology students, looking to broadening their knowledge and expertise. This book is number two in a series of four books. The first chapters of the book take you from the convergence of blockchain and IoT, via an overview of the most important blockchain of things projects such as IOTA, and the industries, which are heavily being disrupted, into the blockchain of intelligent things, which essentially adds the business value of data science and AI. Further topics you will find in this book include chapters such as required skills, jobs and future, industrial IoT (IIoT) platforms, and opportunities, challenges, and trends

of the blockchain of intelligent things. Readers looking for a methodology to engage in blockchain, IoT, and/or AI projects, can find a comprehensive description in my previous book *New World Technologies: 2020 and Beyond*.

Building the Hyperconnected Society- Internet of Things Research and Innovation Value Chains, Ecosystems and Markets

This book aims to provide a broad overview of various topics of Internet of Things (IoT), ranging from research, innovation and development priorities to enabling technologies, nanoelectronics, cyber-physical systems, architecture, interoperability and industrial applications. All this is happening in a global context, building towards intelligent, interconnected decision making as an essential driver for new growth and co-competition across a wider set of markets. It is intended to be a standalone book in a series that covers the Internet of Things activities of the IERC – Internet of Things European Research Cluster from research to technological innovation, validation and deployment. The book builds on the ideas put forward by the European Research Cluster on the Internet of Things Strategic Research and Innovation Agenda, and presents global views and state of the art results on the challenges facing the research, innovation, development and deployment of IoT in future years. The concept of IoT could disrupt consumer and industrial product markets generating new revenues and serving as a growth driver for semiconductor, networking equipment, and service provider end-markets globally. This will create new application and product end-markets, change the value chain of companies that creates the IoT technology and deploy it in various end sectors, while impacting the business models of semiconductor, software, device, communication and service provider stakeholders. The proliferation of intelligent devices at the edge of the network with the introduction of embedded software and app-driven hardware into manufactured devices, and the ability, through embedded software/hardware developments, to monetize those device functions and features by offering novel solutions, could generate completely new types of revenue streams. Intelligent and IoT devices leverage software, software licensing, entitlement management, and Internet connectivity in ways that address many of the societal challenges that we will face in the next decade.

The Internet of Things

Provides comprehensive coverage of the current state of IoT, focusing on data processing infrastructure and techniques Written by experts in the field, this book addresses the IoT technology stack, from connectivity through data platforms to end-user case studies, and considers the tradeoffs between business needs and data security and privacy throughout. There is a particular emphasis on data processing technologies that enable the extraction of actionable insights from data to inform improved decision making. These include artificial intelligence techniques such as stream processing, deep learning and knowledge graphs, as well as data interoperability and the key aspects of privacy, security and trust. Additional aspects covered include: creating and supporting IoT ecosystems; edge computing; data mining of sensor datasets; and crowd-sourcing, amongst others. The book also presents several sections featuring use cases across a range of application areas such as smart energy, transportation, smart factories, and more. The book concludes with a chapter on key considerations when deploying IoT technologies in the enterprise, followed by a brief review of future research directions and challenges. The Internet of Things: From Data to Insight Provides a comprehensive overview of the Internet of Things technology stack with focus on data driven aspects from data modelling and processing to presentation for decision making Explains how IoT technology is applied in practice and the benefits being delivered. Acquaints readers that are new to the area with concepts, components, technologies, and verticals related to and enabled by IoT Gives IoT specialists a deeper insight into data and decision-making aspects as well as novel technologies and application areas Analyzes and presents important emerging technologies for the IoT arena Shows how different objects and devices can be connected to decision making processes at various levels of abstraction The Internet of Things: From Data to Insight will appeal to a wide audience, including IT and network specialists seeking a broad and complete understanding of IoT, CIOs and CIO teams, researchers in IoT and related fields, final year undergraduates, graduate students, post-graduates, and IT and science media professionals.

Digital Transformation Of Property In Greater China, The: Finance, 5g, Ai, And Blockchain

'A masterful narration on the digitization of property in China.'Tan YinglanFounding Managing PartnerInsignia Ventures Partners, Singapore'...captures the fascinating story of 'smart city initiatives' and

tells you all you need to know.'Ben ShenglinProfessor & DeanInternational Business SchoolZhejiang University, Hangzhou'...smartly combines economics, geo-politics, finance and real estate.'Joshua VargheseFounding Partner, Axia Real Assets, TorontoLong-planned advances in China — in 5G, blockchain, central bank coins, and SME superapps — have coalesced into a new world of digitized, tokenized, and tradable assets. New digital mega-projects like the Blockchain Service Network, smart cities, and new foreign exchange digital rails are animating physical assets: offices, warehouses, homes, and farms. Powered by a network of sensors, AI, and distributed trust, property has digitized wings. The resulting inflow of data from every part of the 'built' world will create new industries, uproot traditional finance, and transform cities.The global trade war is not just a re-ordering of technology: it's a re-ordering of cities. Nations which export this digital technology first will alter the digital fabric of the developing world. A digital Non-Aligned Movement is afoot! One way for the US to catch up is public-private partnerships between Silicon Valley and DC — or just 'copy' China. This book explores the many people and companies, large and small, which are blazing new trails in China's 'Internet of Everything' to transform the way we live, buy, and move.

Emerging Ecosystem-Centric Business Models for Sustainable Value Creation

A hyperconnected, constantly evolving world has emerged. A world where people (internet of people), things (internet of things), and data (internet of data) are linked together, shaping the global economy while demanding new, innovative approaches for value creation. The era of hyper-connectivity is no longer characterized by centralized firm-centric business structures and traditional intra-firm and inter-firm processes. Open, distributed ecosystemic formations have started to emerge, utilizing cutting edge technologies to harness the collective power, co-creation ability, and intelligence of the crowd, the data, and the environment in an open participatory value co-creation mode. However, the question has become whether the frameworks, models, and tools that organizations use to create value will remain the same in the new business environment and within the organizations themselves. Existing literature on ecosystems, business models, and business model innovation are starting to examine these aspects. Emerging Ecosystem-Centric Business Models for Sustainable Value Creation explores emerging technology-enabled ecosystems and ecosystem-centric business models in theory and practice, from a business and technological perspective, and in a range of industrial settings, aiming to contribute to the existing knowledge of innovative technology-advanced ecosystems and business models, facilitating their design, implementation, and sustainable value creation. It examines the dynamics of this technology-powered revolution and how it is influencing the foundations of value creation and business modeling in novel ecosystemic formations across the HMD triangle: human, machine, and data. The target audience of this book is researchers and professionals in the fields of innovation, business, and strategy as well as computer science and information technology, along with managers, executives, practitioners, researchers, academicians, and students interested in new ways to create value in emerging and future ecosystems via innovative ecosystem-centric business models and strategies.

Emerging Technologies in Computing

This book constitutes the refereed conference proceedings of the Second International Conference on Emerging Technologies in Computing, iCEtiC 2019, held in London, UK, in August 2019. The 24 revised full papers were reviewed and selected from 52 submissions and are organized in topical sections covering blockchain and cloud computing, security, wireless sensor networks and Internet of Things, (IoT), FinTech, AI, big data and data analytics.