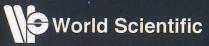
Yang Yan • Bin Wang • Jun Zou

BLOCKCHAIN

Empowering Digital Economy







6 1654525 1 8 458 108 1 1 252997

BLOCKCHAIN

Empowering Digital Economy



Yang Yan Bin Wang Jun Zou

Zhongguancun Big Data Industry Alliance, China Zhongguancun Digital Media Industry Alliance, China Terminus Technologies Group, China





Contents

Expert Advisory Committee	
Series Editorial Board	ix
Members	xi
Recommendations	xiii
Foreword	
Preface	xix
About the Authors	xxiii
Chapter 1 Blockchain: Past and Present	1
1. What is the Blockchain?	1
2. The Development of Blockchain	2
3. Transformation Brought about by the Blockchain	4
4. Supervision Related to the Blockchain	7
Chapter 2 Blockchain Technology Architecture and	
Development Trends	9
1. We Examine the Relationship Between Technology	
and Architecture	9
2. We Discuss the Development of Blockchain	
Architecture — from 1.0 to 3.0	10
3. The Problems and Challenges of the Blockchain Architecture	12
3.1. Typical problems of the current blockchain platform	13
3.2 Typical requirements for blockshain applications	15

4. Blockchain 3.0 and Its Development Direction	18
4.1. Blockchain operating system	18
4.2. Blockchain middleware	18
4.3. Blockchain network	18
4.4. Blockchain side chain technology	18
4.5. Block expansion	19
4.6. Off-chain computation	19
4.6. Off-chain computation4.7. Sharding	19
4.8. Blockchain storage	19
4.9. Consensus mechanism	19
4.10. Blockchain platform adapted to the application scenario	20
4.11. Data authenticity guarantee	20
4.12. Security and privacy	20
4.13. Formal proof	20
5. Profiles of Blockchain Projects that Claim to Represent the	
Blockchain 3.0 Architecture	20
5.1. The blockchain operating system known as	
blockchain 3.0 — EOS	21
5.2. Competition candidate projects for blockchain middlewa	are 22
5.3. Blockchain network project	22
5.4. Blockchain projects based on side chains	24
6. Ethereum's Blockchain 3.0 Tour	28
7. The Outlook for Blockchain 4.0	31
8. Blockchain and Storage	32
9. Alternative Platforms to Blockchain	33
9.1. R3 Corda	33
9.2. DAG directed acyclic graph system	33
9.3. Hashgraph	34
10. Security and Privacy Protection	35
Chapter 3 Digital Economy and Blockchain	37
1. The Digitalization of Industry	38
2. Digital Industrialization	41
3. The Digital Economy Era	45
Chapter 4 Relevant Laws, Regulations, Supervision and	
Application of Blockchain	53
Legal Regulation of Blockchain Technology	53
1.1. Technology and legal regulation	53
1.2. The dimension of the legal regulation of blockchain	55

96 99

103

2.5. Blockchain + city management

2.6. Blockchain + education governance2.7. Blockchain + customs border inspection

3.	Governments have Issued Blockchain-Related	
	Development Policies	101
4.	Suggested Measures to Promote Healthy Development	
	of Blockchain Applications	113
	4.1. Strengthen the top-level design of blockchain development	113
	4.2. Enhance support for core technology research	113
	4.3. Select key industries to demonstrate first	114
	4.4. Strengthen supervision of industrial development	
	and application	115
5.	Actively Promote the Construction of Standards and Norms	116
	Promote Industrial Chain and Ecosystem Construction	117
Cl	hapter 6 Promoting the Big Data Industry, the Internet	
	of Things and Artificial Intelligence	119
1.	Application of Blockchain in Big Data Industry	119
	1.1. The problems encountered in the development of big data	119
	1.2. The application of blockchain in the big data industry	121
	1.3. The development of the integration of blockchain and	
	big data	124
2.	Blockchain + Internet of Things	126
	2.1. The blockchain escorts the Internet of Things	127
	2.2. The status quo of development and application	128
	2.3. The technical principle	130
	2.4. The application scenario	130
	2.5. Future prospects	132
3.	Relationship between Big Data, Artificial Intelligence and	
	Blockchain	132
CI	hapter 7 Application Cases of Blockchain Combined	
	with Real Industry	135
1.	Blockchain + Finance	135
	1.1. The new power of financial technology — blockchain	135
	1.2. Blockchain + financial scenarios	137
	1.3. Blockchain + financial application in the banking sector	145
	1.4. Blockchain + application in asset custody	149
	1.5. Blockchain + insurance	152
	1.6. Blockchain + promote a new era of financial technology	155

2.	Blockchain + Cultural and Creative Industry: Creating	
	Infinite Space	161
	2.1. Blockchain + cultural entertainment	162
	2.2. Blockchain + media	165
	2.3. Blockchain + digital copyright protection	167
	2.4. Blockchain + development and recommendations	
	of cultural and creative industries	170
3.	Blockchain + Health and Medical Industry	173
	3.1. The background of digital medical	174
	3.2. The blockchain application scenario overview	175
	3.3. The global blockchain medical case	177
	3.4. Blockchain medical industry trends	182
4.	Blockchain + Real Estate	183
	4.1. Blockchain + real estate application scenario	183
	4.2. New opportunities in blockchain + real estate	185
	4.3. Application case in blockchain + real estate	187
	4.4. Application value in blockchain + real estate	189
5.	Blockchain + Agriculture	191
	5.1. Grasping the opportunities and challenges of the	
	blockchain + agriculture	191
	5.2. The implementation of blockchain agricultural	
	application scenarios	193
	5.3. Promote blockchain agricultural policy recommendations	196
	5.4. Blockchain + agricultural traceability	198
Аŗ	ppendix A: CIFC Blockchain + Hundred People Summit	203
Αp	ppendix B: Blockchain Events	209
Аŗ	opendix C: Design of Digital Economy Industrial Park	217
In	dex	227