

Table of Contents

About the Author	vii
Table of Chapters	ix
Preface	xix
Acknowledgments	xxi

Chapter 1 What Is IoT?

§ 1:1	Definition of IoT	1-1
§ 1:2	History of the IoT.....	1-2
§ 1:3	How the IoT Works	1-4
§ 1:4	Benefits.....	1-6
§ 1:5	Drawbacks	1-6
§ 1:6	Challenges	1-7
§ 1:7	Net Neutrality	1-9
§ 1:8	IoT in the World.....	1-11
§ 1:8.1	Home and Office	1-11
§ 1:8.2	Cities	1-14
§ 1:8.3	Manufacturing.....	1-16
§ 1:8.4	Vehicles	1-17
§ 1:8.5	Transportation	1-19
[A]	Aviation	1-19
[B]	Rail	1-20
[C]	Maritime	1-20
§ 1:8.6	Healthcare	1-21
§ 1:8.7	Energy.....	1-23
§ 1:8.8	Agriculture.....	1-24
§ 1:9	Conclusion	1-24

Chapter 2 Regulatory Framework of the IoT

§ 2:1	Overview	2-2
§ 2:2	Regulatory Agencies.....	2-2
§ 2:2.1	The Consumer Financial Protection Bureau (CFPB)	2-4
§ 2:2.2	The Department of Defense (DOD)	2-4

§ 2:2.3	The Department of Energy (DOE)	2-5
§ 2:2.4	The Department of Homeland Security (DHS)	2-6
§ 2:2.5	The Department of Justice (DOJ)	2-7
§ 2:2.6	The Federal Aviation Administration (FAA).....	2-8
§ 2:2.7	The Federal Communications Commission (FCC).....	2-8
§ 2:2.8	The Federal Trade Commission (FTC).....	2-9
§ 2:2.9	The Food & Drug Administration (FDA)	2-9
§ 2:2.10	The National Institute of Standards and Technology (NIST) and The National Telecommunications and Information Administration (NTIA).....	2-10
§ 2:3	General Legislation.....	2-11
§ 2:3.1	The Federal Trade Commission Act (FTCA).....	2-11
§ 2:3.2	The Health Insurance Portability and Accountability Act (HIPAA)	2-12
§ 2:3.3	The Fair Credit Reporting Act (FCRA).....	2-15
§ 2:3.4	The Children’s Online Privacy Protection Act (COPPA)	2-17
§ 2:3.5	The Electronic Communications Privacy Act (ECPA).....	2-18
§ 2:4	Federal IoT-Specific Legislation	2-19
§ 2:4.1	Congressional Resolutions.....	2-19
§ 2:4.2	The DIGIT Act.....	2-20
§ 2:4.3	The Internet of Medical Things Resilience Partnership Act of 2017	2-22
§ 2:4.4	The State of Modern Application, Research, and Trends of IoT Act.....	2-23
§ 2:5	Conclusion	2-23

Chapter 3 Privacy

§ 3:1	Overview	3-2
§ 3:2	Regulation of Privacy in IoT Arena	3-2
§ 3:2.1	Sensor Fusion	3-2
§ 3:2.2	Omnibus vs. Sectoral Approach	3-3
§ 3:2.3	Privacy Policies	3-4
§ 3:3	Federal Approaches	3-5
§ 3:3.1	Executive Branch	3-5
§ 3:3.2	Congress.....	3-6
§ 3:3.3	FIPPs	3-9
§ 3:4	State Approaches	3-11
§ 3:4.1	Event Data Recorders (EDRs).....	3-11
§ 3:4.2	Connected Televisions	3-12
§ 3:4.3	Smart Meters	3-12

Table of Contents

§ 3:4.4 California Consumer Privacy Act (CCPA)..... 3-13
 [A] Personal Information 3-13
 [B] Businesses Covered Under the CCPA 3-14
 [C] Exclusions from the CCPA 3-14
 [D] Protections for California Residents Under
 the CCPA..... 3-15
 [E] Obligations for Businesses Under the CCPA..... 3-16
 [F] Enforcement of the CCPA..... 3-16
 [G] Similarities with the GDPR 3-17
 [H] Differences with the GDPR 3-17
 [I] Criticisms of the CCPA 3-18
§ 3:5 Litigation 3-18
§ 3:6 Conclusion 3-21

Chapter 4 Security

§ 4:1 Overview 4-2
§ 4:2 Security Breach 4-2
 § 4:2.1 Unauthorized Access and Misuse of
 Personal Information 4-3
 § 4:2.2 Attacks on Other Systems 4-3
 § 4:2.3 Physical Harm 4-4
§ 4:3 Challenges of Securing IoT Devices 4-4
 § 4:3.1 Inexperience of IoT Manufacturers 4-5
 § 4:3.2 Costs and Design 4-5
 § 4:3.3 Speed of Adoption 4-6
 § 4:3.4 Updates of IoT Products 4-6
 § 4:3.5 Lack of Coordination and Interoperability 4-7
 § 4:3.6 Inadequate Data Breach Notification Laws 4-8
§ 4:4 Potential Solutions 4-10
 § 4:4.1 Security by Design 4-11
 § 4:4.2 Dedicated Network 4-12
 § 4:4.3 Manage Updates 4-12
 § 4:4.4 Government Intervention 4-12
 [A] Government As Purchaser 4-13
 [B] Government As Regulator 4-13
 [C] Government As Legislator 4-15
 [C][1] Internet of Things Cybersecurity Act of 2017 4-16
 [C][2] California SB 327 4-19
 § 4:4.5 Private Litigation 4-21
 [A] In the Home 4-21
 [B] Medical 4-23
 [C] Smart Vehicles 4-24
 [D] Non-IoT Security Breaches 4-25
 § 4:4.6 Insurance 4-26
§ 4:5 Conclusion 4-30

Chapter 5 Contracts

§ 5:1	Overview	5-1
§ 5:2	Contract Law Applicable to the IoT	5-2
§ 5:2.1	IoT As Product or Service	5-2
[A]	Contracts for Goods Under the UCC	5-4
[B]	Service Contracts and Intangible Goods Under Common Law	5-5
[C]	Mixed Contracts—The Reality of Hybrid IoT Transactions	5-6
§ 5:2.2	Legal Tests to Determine the Applicable Law for Hybrid IoT Transactions	5-8
[A]	The Predominant Purpose Test	5-11
[B]	The Component Test	5-13
[C]	The Gravamen of the Claims Test	5-14
§ 5:3	Determining Contract Formation	5-15
§ 5:3.1	Mutual Assent—Offer and Acceptance in IoT Transactions	5-15
§ 5:3.2	Mutual Assent—“Contract Distancing” in IoT Transactions	5-19
§ 5:4	Available Defenses	5-20
§ 5:4.1	Unconscionability in IoT Contracts	5-21
[A]	Substantive Unconscionability	5-22
[B]	Procedural Unconscionability	5-23
§ 5:4.2	Misrepresentation, Mistake, and Fraud	5-24
§ 5:5	Conclusion	5-26

Chapter 6 Ownership and Intellectual Property

§ 6:1	Overview	6-1
§ 6:2	Ownership	6-1
§ 6:2.1	Shared Ownership	6-4
§ 6:3	Intellectual Property	6-7
§ 6:3.1	Copyright Law	6-7
[A]	Digital Millennium Copyright Act (DMCA)	6-11
§ 6:3.2	Trade Secret Law	6-13
§ 6:3.3	Patent Law	6-15
§ 6:4	Conclusion	6-20

Chapter 7 Consumer Protection Litigation

§ 7:1	Overview	7-1
§ 7:2	Theories of Liability	7-2
§ 7:2.1	Chain of Liability in Product Liability Cases	7-2

Table of Contents

§ 7:3	Drafting Around Liability	7-6
§ 7:3.1	Shrinkwrap Contracts vs. Clickwrap Contracts	7-7
§ 7:4	Product Liability	7-7
§ 7:4.1	Challenges Regarding Software Liability	7-8
§ 7:4.2	Manufacturing Defect.....	7-10
§ 7:4.3	Design Defect	7-11
§ 7:4.4	Product Failure.....	7-12
§ 7:4.5	Failure to Warn	7-13
§ 7:4.6	Ransomware	7-13
§ 7:4.7	Negligence	7-15
§ 7:5	Standing	7-16
§ 7:6	Class Actions.....	7-19
§ 7:7	Mass Torts	7-21
§ 7:8	Discrimination Based on IoT Data.....	7-22
§ 7:8.1	Economic Discrimination.....	7-25
§ 7:8.2	Application and Mitigation of Discrimination	7-25
§ 7:9	Conclusion	7-26

Chapter 8 Civil Discovery

§ 8:1	Overview	8-1
§ 8:2	Background.....	8-1
§ 8:2.1	E-Discovery	8-2
§ 8:2.2	Metadata	8-3
§ 8:3	Identifying IoT Content.....	8-4
§ 8:4	Locating IoT Content	8-4
§ 8:5	Obtaining IoT Content.....	8-5
§ 8:6	Preservation of IoT Content	8-6
§ 8:7	Spoliation	8-7
§ 8:8	Conclusion	8-8

Chapter 9 Criminal Law and Procedure

§ 9:1	Overview	9-1
§ 9:2	IoT As a Vehicle for Crime	9-1
§ 9:2.1	Preventing Access by Others.....	9-2
§ 9:2.2	Causing the IoT Device to Malfunction.....	9-3
§ 9:2.3	Weaponizing	9-4
§ 9:3	Role of IoT in Criminal Investigations	9-8
§ 9:3.1	Illustrative Cases	9-8
§ 9:3.2	Role of Business in IoT Criminal Investigations	9-11
§ 9:4	Constitutional Limitations on Government Use of IoT	9-12
§ 9:4.1	In the Home	9-13