1. Record Nr. UNINA9910830441603321 Autore Fattahi Ahmad **Titolo** IoT product design and development: best practices for industrial, consumer, and business applications / / Ahmad Fattahi Pubbl/distr/stampa Hoboken, NJ: .: John Wiley & Sons, Inc., . [2022] ©2022 **ISBN** 1-119-78768-8 1-119-78766-1 1-119-78767-X Descrizione fisica 1 online resource (200 pages) Collana IoT Skills in Practice Disciplina 004.67/8 Soggetti Internet of things Product design New products Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Cover -- Title Page -- Copyright Page -- Contents --Nota di contenuto Acknowledgments -- Preface -- Chapter 1 Introduction to IoT -- WHAT IS IoT? -- WHY IS IoT IMPORTANT? -- WHY NOW? -- Chapter 2 IoT and Digital Transformation -- THE ROLE OF IoT IN MODERN BUSINESSES --Opportunities -- Risks -- IT'S AN INTEGRATION PROCESS: THE HUMAN ASPECTS OF DIGITAL TRANSFORMATION -- IT-OT Integration --Building Trust Is Key -- Chapter 3 Business Models and Market Analysis -- BUSINESS AND INDUSTRIAL MARKET -- The Shift to Software-Based PLCS -- Example: Improve Cost and Reliability of a Power Distribution System with IoT -- Example: Enhance Safety, Security, and Carbon Footprint in an Airport Using IoT -- CONSUMER MARKET -- Sources of Cost -- Sources of Revenue -- Matter, Formerly Known as Project Connected Home Over IP (CHIP) -- Example: Improve Quality of Life and Energy Efficiency by Smart Thermostats -- CONNECTIVITY CHOICE AND ITS IMPACT ON ROI -- CLIMATE CHANGE AND PERFORMANCE PER

WATT -- DATA BY-PRODUCTS BEYOND THE ORIGINAL IOT APPLICATION

-- Services and Device Management -- Peripheral Businesses -- Marketing -- Data Management -- Analytics and AI -- Developers --

Security and Safety -- Chapter 4 Security -- ENCRYPTION TECHNIQUES -- Symmetric Encryption Algorithms -- Asymmetric Encryption
Algorithms -- SOFTWARE AND FIRMWARE UPDATE TECHNIQUES -- Random Key Generation -- Software and Firmware Update Process -- KEY MANAGEMENT AND PROTECTION AGAINST KNOWN THREATS -- SECURITY ATTACKS AND CHAIN OF TRUST -- Security Attacks -- Chain of Trust -- Incident Response -- BLOCKCHAIN -- SUMMARY OF BEST SECURITY PRACTICES FOR IOT SYSTEMS -- NETWORKING CONCEPTS -- Proxy -- VPN -- Firewall -- DMZ -- IOT SECURITY STANDARDS AND CERTIFICATES -- ioXT -- UL -- Matter, Formerly Known as Project Home over IP (CHIP) -- Governmental Regulations and Other General Guidelines.

Chapter 5 IoT System Design Process and Main Components -- DESIGN AND DEPLOYMENT PROCESS -- Roles, Responsibilities, and Team Structure -- Process - A Deeper Look -- SENSORS -- Common Sensors -- General Sensor Concepts -- Filtering the Sensor Output -- FILE SYSTEMS -- Data in Motion versus Data at Rest -- MACHINE LEARNING -- History and Background -- Categories of Learning Algorithms --General Machine Learning Concepts -- How a Machine Learning Model Is Built -- Overfitting -- Data Set, Explainability, and Supervised Concepts -- What Is and What Is Not Machine Learning? -- Machine Learning Architecture -- NETWORKING AND COMMUNICATION SYSTEM, PRODUCT LIFECYCLE, DEVICE MANAGEMENT -- IoT System Architecture: Edge, Cloud, and Fog -- Networking -- WIRELESS COMMUNICATION PROTOCOLS -- Short-Range Wireless Protocols --Long-Range Wireless Protocols -- EXAMPLES -- Smart Video Doorbell -- Energy-Efficient Office -- IoT SYSTEMS LIFECYCLE -- Chapter 6 The Process of Building a Data Product -- WHAT PERSONAS DO YOU NEED ON YOUR TEAM? -- BUSINESS UNDERSTANDING -- DATA UNDERSTANDING -- DATA PREPARATION -- MODELING --EVALUATION -- DEPLOYMENT -- THE CYCLE REPEATS - CRISP-DM --Chapter 7 Concluding Remarks -- Further Reading -- Index -- EULA.

Sommario/riassunto

"This book will set up the foundation for the successful process of going about the IoT product design and management while offering specific practical and tried recommendations before, during, and after execution. It also offers a practical recipe for the endeavor by offering technological and human-related best practices and pitfalls based on numerous real-world examples. While high level technology, data, and business principles will be discussed, this book is not a deep technical guide that covers technological solutions in detail. Rather we cover the breadth of the technologies related to IoT at a high level. As an analogy, imagine that you are trying to design a few guided tours in 2 states in the United States. This book would be the equivalent of zooming out on the whole 50 states' geographical characteristics, how the federal and state regulations apply, how the seasons work in the United States, and how tours generally fail or succeed in this country. You will be able to understand who you need to connect with and understand the interests of tour guides, hikers, caterers, state park rangers, and the wildlife regulations. You may not become a restaurant owner but you would learn enough to be able to hire them and ask them the right questions. In the opposite direction, if you are a restaurant owner and like to engage with tours you can learn about their business and be more successful at negotiating a better deal. Equivalently, the reader of this book will have a much better likelihood of a successful product design and development after applying the principles in the book. You will know what aspects will be needed, what questions to ask, where to dig more deeply, and what kind of skills set you up for success. Also if you are deep into any one of the pillars of

IoT products such as product development, security, hardware, software, data science, or other related fields you will gain a valuable understanding of other skills in the ecosystem and how you can best connect with them"--