Technological Innovation For The Internet Of Things 4th Ifip Wg 55socolnet Doctoral Conference On Computing Electrical And Industrial Systems In Information And Communication Technology

Recent advances in ICT have given rise to new socially disruptive technologies: AmI and the IoT, marking a major technological change which may lead to a drastic transformation of the technological ecosystem in all its complexity, as well as to a major alteration in technology use and thus daily living. Yet no work has systematically explored AmI and the IoT as advances in science and technology (S&T) and sociotechnical visions in light of their nature, underpinning, and practices along with their implications for individual and social wellbeing and for environmental health. AmI and the IoT raise new sets of questions: In what way can we conceptualize such technologies? How can we evaluate their benefits and risks? How should science–based technology and society's politics relate? Are science-based technology and society converging in new ways? It is with such questions that this book is concerned. Positioned within the research field of Science and Technology Studies (STS), which encourages analyses whose approaches are drawn from a variety of disciplinary perspectives, this book amalgamates an investigation of AmI and the IoT technologies based on a unique approach to cross–disciplinary integration; their ethical, social, cultural, political, and environmental effects; and a philosophical analysis and evaluation of the implications of such

effects. An interdisciplinary approach is indeed necessary to understand the complex issue of scientific and technological innovations that S&T are not the only driving forces of the modern, high–tech society, as well as to respond holistically, knowledgeably, reflectively, and critically to the most pressing issues and significant challenges of the modern world. This book is the first systematic study on how AmI and the IoT applications of scientific discovery link up with other developments in the spheres of the European society, including culture, politics, policy, ethics and ecological philosophy. It situates AmI and the IoT developments and innovations as modernist science–based technology enterprises in a volatile and tense relationship with an inherently contingent, heterogeneous, fractured, conflictual, plural, and reflexive postmodern social world. The issue's topicality results in a book of interest to a wide readership in science, industry, politics, and policymaking, as well as of recommendation to anyone interested in learning the sociology, philosophy, and history of AmI and the IoT technologies, or to those who would like to better understand some of the ethical, environmental, social, cultural, and political dilemmas to what has been labeled the technologies of the 21st century.

Information technology accounts for over one-third of recent U.S. GDP growth and nearly two-thirds of corporate capital investment. "The New Economy" appears omnipresent, but little is actually known about its workings. This seminal volume brings together the research and critical thinking of many of the world's top macro and micro economists to provide a unique, multifaceted perspective. Through the use of detailed, up-to-date country and industry studies, this book provides the most authoritative and detailed analysis ever assembled into the causes of technological innovation and its relationship to economic performance. The country studies cover the United States, Japan, Germany, France, the United Kingdom, and the Nordic states.

Nine industry studies examine the Internet, computers and semiconductors, banking, securities trading, venture capital, energy, agricultural biotechnology, pharmaceutical biotechnology, and automobiles. Commissioned and brought together for the research project by the world-renowned Council on Foreign Relations, the authors have produced one of the most important compendia in applied economics to be published in recent times. The contributors are Charles Calomiris, Ian Domowitz, Robert Evenson, Charles Fine, Robert Gordon, Richard Langlois, Josh Lerner, Markku Malkamäki, Patrick Messerlin, Joel Mokyr, David Mowery, Richard R. Nelson, Stephen Nickell, Gary Pisano, Adam Posen, Daniel Raff, Horst Siebert, Timothy Simcoe, Benn Steil, Michael Stolpe, John Van Reenen, David Victor, and Matti Virén.

Written by the author who helped crystalize the field of technology management and the management of innovation with the first two editions of Managing Technological Innovation, this Third Edition brings the subject in line with current business strategy. It also presents information in a newer organized format that aligns more closely with how the topics are presented and discussed in the classroom. Also included is a wider discussion of how science and technology interact with the global economy.

Will innovators be forced to seek the blessing of public officials before they develop and deploy new devices and services, or will they be generally left free to experiment with new technologies and business models? In this book, Adam Thierer argues that if the former disposition, “the precautionary principle,” trumps the latter, “permissionless innovation,” the result will be fewer services, lower-quality goods, higher prices, diminished economic growth, and a decline in the overall standard of living. When public policy is shaped by “precautionary principle” reasoning, it poses a serious threat to technological progress, economic

entrepreneurialism, and long-run prosperity. By contrast, permissionless innovation has fueled the success of the Internet and much of the modern tech economy in recent years, and it is set to power the next great industrial revolution—if we let it.

Female scientists, technologists, engineers, and mathematicians worldwide are making historic contributions to their fields. The modern workforce is closer to gender-equal than it has ever been, and many efforts are in place to support further progress. The Internet of Women provides an exciting look at personal narratives and case studies of female leaders and cultural shifts around the globe that illustrate this promising trend. From the United Nations' emphasis on girls and technology education in the Sustainable Development Goals to the increased female labor force in Zambia, a policy change that was inspired by the UN Millennial Development Goals, The Internet of Women captures stunning examples of progress from around the world and men working hand in hand with women advocating for cultural change. Gender equality and female participation in the tech field is critical to both developing and developed economies; nevertheless, this gap remains a global phenomenon. Without significant progress, the current rate of change will not lead to parity for 118 years, according to the World Economic Forum. However there's significant work being done to shift this tide. Take for instance Michelle Lee, the first female Under Secretary of Commerce for Intellectual Property and Director of the United States Patent and Trademark Office, reflects on her childhood Girl Scout badge in sewing and cooking and how that memory inspired to create an IP badge that exposes young women to the process of invention. This book gathers examples about the increasingly inclusive and progressive gender culture in technology from over 30 countries. Stories range from an entrepreneur in Dubai partnering with private and public

sector entities to accelerate blockchain technology to a young British woman moving to Silicon Valley to launch an artificial intelligence platform and incubator. The book is divided into six parts, each with unique areas of focus: Millennials Leading: Exploring Challenges and Opportunities Facing the Next Generation of Women in TechnologyMen and Women Empowering One AnotherBold Leadership: Women Changing the Culture of Investment and EntrepreneurshipEducating for the 21st CenturyBreaking the Glass Ceiling: A Generation of Women Forging into Technology LeadershipEmerging Fields of Technology The book is intended for corporations, academic institutions, the private sector, government agencies, gender experts, and the general public, and its key benefit is to let the reader understand a path towards implementing diversity overall globally. It also showcases the strategies, tools, and tactical execution on how create cultural change in all parts of the world.

Historian Thomas J. Misa's sweeping history of the relationship between technology and society over the past 500 years reveals how technological innovations have shaped -- and have been shaped by -- the cultures in which they arose. Spanning the preindustrial past, the age of scientific, political, and industrial revolutions, as well as the more recent eras of imperialism, modernism, and global security, this compelling work evaluates what Misa calls "the question of technology." Misa brings his acclaimed text up to date by examining how today's unsustainable energy systems, insecure information networks, and vulnerable global shipping have helped foster geopolitical risks and instability. A masterful analysis of how technology and culture have influenced each other over five centuries, Leonardo to the Internet frames a history that illuminates modern-day problems and prospects faced by our technology-dependent world. Praise for the first edition "Closely reasoned, reflective, and written with

insight, grace, and wit, Misa's book takes us on a personal tour of technology and history, seeking to define and analyze paradigmatic techno-cultural eras." -- Technology and Culture "Follows [Thomas] Hughes's model of combining an engaging historical narrative with deeper lessons about technology." -- American Scholar "His case studies, such as that of Italian futurism or the localizations of the global McDonalds, provide good starting points for thought and discussion." -- Journal of Interdisciplinary History "This review cannot do justice to the precision and grace with which Misa analyzes technologies in their social contexts. He convincingly demonstrates the usefulness of his conceptual model." -- History and Technology "A fascinating, informative, and well-illustrated book." -- Choice

Internet of Things Applications aims to provide a broad overview of various topics of Internet of Things (IoT) from the research, innovation, and development priorities to enabling technologies, nanoelectronics, cyber physical systems, architecture, interoperability, and industrial applications. It is intended to be a standalone book in a series that covers the IoT activities of the Internet of Things European Research Cluster (IERC) from technology to international cooperation and the global "state of play." The book builds on the ideas put forward by the IERC Strategic Research Agenda and presents global views and state-of-the-art results on the challenges the research, development, and deployment of IoT face at the global level. IoT is creating a revolutionary new paradigm with opportunities in every industry, including Health Care, Pharmaceuticals, Food and Beverage, Agriculture, Computer, Electronics Telecommunications, Automotive, Aeronautics, Transportation Energy, and Retail, to apply the massive potential of the IoT to achieving real-world solutions. The beneficiaries will include semiconductor companies, device and product companies, infrastructure software

companies, application software companies, consulting companies, and telecommunication and cloud service providers. IoT will create new revenues annually for these stakeholders and potentially create substantial market share shakeups due to increased technology competition. The IoT will fuel technology innovation by creating the means for machines to communicate several different types of information with one another. At the same time, it will contribute to the increased value of information created by the number of interconnections among things and the transformation of the processed information into knowledge shared in the Internet of Everything. The success of IoT depends strongly on enabling technology development, market acceptance, and standardization, which provides interoperability, compatibility, reliability, and effective operations on a global scale. The connected devices are part of ecosystems connecting people, processes, data, and things which are communicating in the cloud, using the increased storage and computing power and pushing for standardization of communication and metadata. In this context, product manufacturers have to address security, privacy, safety, and trust through the life cycle of their products, from design to the support processes. The IoT developments address the whole IoT spectrum - from devices at the edge to cloud and datacentres on the backend and everything in between - through ecosystems created by industry, research, and application stakeholders that enable real-world use cases to accelerate the IoT and establish open interoperability standards and common architectures for IoT solutions. Enabling technologies such as nanoelectronics, sensors/actuators, cyber-physical systems, intelligent device management, smart gateways, telematics, smart network infrastructure, cloud computing, and software technologies will create new products, services, and interfaces by creating smart environments and smart spaces with applications ranging

from Smart Cities, smart transport, buildings, energy, and grid to smart health and life. Technical topics discussed in the book include: * Introduction * Internet of Things Strategic Research and Innovation Agenda * Internet of Things in the industrial context: Time for deployment. * Integration of heterogeneous smart objects, applications and services * Evolution from device to semantic and business interoperability * Software define and virtualization of network resources * Innovation through interoperability and standardisation when everything is connected anytime at anyplace * Dynamic context-aware scalable and trust-based IoT Security, Privacy framework * Federated Cloud service management and the Internet of Things * Internet of Things Applications

Physics at the beginning of the twenty-first century has reached new levels of accomplishment and impact in a society and nation that are changing rapidly. Accomplishments have led us into the information age and fueled broad technological and economic development. The pace of discovery is quickening and stronger links with other fields such as the biological sciences are being developed. The intellectual reach has never been greater, and the questions being asked are more ambitious than ever before. Physics in a New Era is the final report of the NRC's six-volume decadal physics survey. The book reviews the frontiers of physics research, examines the role of physics in our society, and makes recommendations designed to strengthen physics and its ability to serve important needs such as national security, the economy, information technology, and education.

As innovators continue to explore and create new developments within the fields of artificial intelligence and computer science, subfields such as machine learning and the internet of things (IoT) have emerged. Now, the internet of everything (IoE), foreseen as

a cohesive and intelligent connection of people, processes, data, and things, is theorized to make internet connections more valuable by converting information into wise actions that create unprecedented capabilities, richer experiences, and economic opportunities to all players in the market. Harnessing the Internet of Everything (IoE) for Accelerated Innovation Opportunities discusses the theoretical, design, evaluation, implementation, and use of innovative technologies within the fields of IoE, machine learning, and IoT. Featuring research on topics such as low-power electronics, mobile technology, and artificial intelligence, this book is ideally designed for computer engineers, software developers, investigators, advanced-level students, professors, and professionals seeking coverage on the various contemporary theories, technologies, and tools in IoE engineering.

For years we've been inundated with bleak forecasts about the future. But in this electrifying new book, author Byron Reese debunks the pessimistic outlook as dangerous, and shows instead how technology will soon create a dramatically better world for every person on earth, beyond anything we have dared to imagine. With the art of a storyteller, Reese synthesizes history, technology, and sociology into an exciting, fast-moving narrative that shows how technological change has had dramatic effects on humanity in the past. He then looks forward at the technological changes we know are coming—from genetics, nanotechnology, robotics, and many other fields—and explores how they will vastly increase wealth, prolong our lifespans, redefine human

rights, and alter the social fabric of the world. Reese explains how the Internet, human ingenuity, and technological innovation will help us forever end the five historic plagues of human existence: ignorance, disease, poverty, hunger, and war. With a rational and researched optimism, Reese sees the future not as a world in a downward spiral, but as destined for progress beyond our imaginations. As Reese looks forward, he notes that “we are gaining speed, not winding down. We are blooming, not withering, as we leverage the greatest natural resource on the planet: the human mind.” The future of Earth’s inhabitants has never been brighter. If you want to get excited about the future, then this is the book for you.

A comprehensive history of market-shaping industries and their impact on how we invest today This engaging book highlights the history of industrial development and its impact on investors. Today's investors will learn about past approaches to technological advances such as-electricity, the railroad, the telephone, the computer, and much more-while gaining insights on how to appraise the "new technology" companies of the future. This complete and well researched history of industries and investing wouldn't be complete without a look at: how Thomas Edison lost control of his company, the impact of the Standard Oil breakup, the early days of the wireless industry, and the changing face of the computer industry today. Investors looking for industry-shaping investments will undoubtedly use Engines That Move Markets as their guide.

Virginia Heffernan “melds the personal with the increasingly universal in a highly

informative analysis of what the Internet is—and can be. A thoroughly engrossing examination of the Internet's past, present, and future" (Kirkus Reviews, starred review) from one of the best living writers of English prose. This book makes a bold claim: The Internet is among mankind's great masterpieces—a massive work of art. As an idea, it rivals monotheism. But its cultural potential and its societal impact often elude us. In this deep and thoughtful book, Virginia Heffernan reveals the logic and aesthetics behind the Internet, just as Susan Sontag did for photography and Marshall McLuhan did for television. Life online, in the highly visual, social, portable, and global incarnation rewards certain virtues. The new medium favors speed, accuracy, wit, prolificacy, and versatility, and its form and functions are changing how we perceive, experience, and understand the world. In "sumptuous writing, saturated with observations that are simultaneously personal, cultural, and strikingly original" (The New Republic), Heffernan presents "a revealing look at how the Internet continues to reshape our lives emotionally, visually, and culturally" (The Smithsonian Magazine). "Magic and Loss is an illuminating guide to the Internet...it is impossible to come away from this book without sharing some of Heffernan's awe for this brave new world" (The Wall Street Journal).

The past 50 years have witnessed a revolution in computing and related communications technologies. The contributions of industry and university researchers to this revolution are manifest; less widely recognized is the major role the federal

government played in launching the computing revolution and sustaining its momentum. Funding a Revolution examines the history of computing since World War II to elucidate the federal government's role in funding computing research, supporting the education of computer scientists and engineers, and equipping university research labs. It reviews the economic rationale for government support of research, characterizes federal support for computing research, and summarizes key historical advances in which government-sponsored research played an important role. Funding a Revolution contains a series of case studies in relational databases, the Internet, theoretical computer science, artificial intelligence, and virtual reality that demonstrate the complex interactions among government, universities, and industry that have driven the field. It offers a series of lessons that identify factors contributing to the success of the nation's computing enterprise and the government's role within it.

Never have so many possessed the means to be so lethal. The diffusion of modern technology (robotics, cyber weapons, 3-D printing, autonomous systems, and artificial intelligence) to ordinary people has given them access to weapons of mass violence previously monopolized by the state. In recent years, states have attempted to stem the flow of such weapons to individuals and non-state groups, but their efforts are failing. As Audrey Kurth Cronin explains in Power to the People, what we are seeing now is an exacerbation of an age-old trend. Over the centuries, the most surprising developments in warfare have occurred because of advances in technologies combined with changes

in who can use them. Indeed, accessible innovations in destructive force have long driven new patterns of political violence. When Nobel invented dynamite and Kalashnikov designed the AK-47, each inadvertently spurred terrorist and insurgent movements that killed millions and upended the international system. That history illuminates our own situation, in which emerging technologies are altering society and redistributing power. The twenty-first century "sharing economy" has already disrupted every institution, including the armed forces. New "open" technologies are transforming access to the means of violence. Just as importantly, higher-order functions that previously had been exclusively under state military control - mass mobilization, force projection, and systems integration - are being harnessed by non-state actors. Cronin closes by focusing on how to respond so that we both preserve the benefits of emerging technologies yet reduce the risks. Power, in the form of lethal technology, is flowing to the people, but the same technologies that empower can imperil global security - unless we act strategically.

Discover how 25 powerful technology trends are transforming 21st century businesses How will the latest technologies transform your business? Future Tech Trends in Practice will give you the knowledge of today’s most important technology trends, and how to take full advantage of them to grow your business. The book presents25 real-world technology trends along with their potential contributions to organisational success. You’ll learn how to integrate existing advancements and plan for those that

are on the way. In this book, best-selling author, strategic business advisor, and respected futurist Bernard Marr explains the role of technology in providing innovative businesses solutions for companies of varying sizes and across different industries. He covers wide-ranging trends and provides an overview of how companies are using these new and emerging technologies in practice. You, too, can prepare your company for the potential and power of trending technology by examining these and other areas of innovation described in Future Tech Trends in Practice: Artificial intelligence, including machine and deep learning The Internet of Things and the rise of smart devices Self-driving cars and autonomous drones 3D printing and additive manufacturing Blockchain technology Genomics and gene editing Augmented, virtual and mixed reality When you understand the technology trends that are driving success, now and into the future, you'll be better positioned to address and solve problems within your organisation.

This book constitutes the thorouhly refereed post-conference proceedings of the First Future Internet Symposium, FIS 2008, held in Vienna, Austria, in September 2008. The 10 revised full papers presented together with 4 invited papers were carefully reviewed and selected from numerous submissions. The papers address novel ideas and current research results related to the future internet infrastructure, user-generated content, content visualization, usability, trust and security, collaborative workflows, the internet of services and service science.

Innovations are adopted when users integrate them in meaningful ways into existing social practices. Histories of major technological innovations show that often the creative initiative of users and user communities becomes the determining factor in the evolution of particular innovations. The evolutionary routes of the telephone, the Internet, the World Wide Web, email, and the Linux operating system all took their developers by surprise. Articulation of these technologies as meaningful products and systems was made possible by innovative users and unintended resources. Iterative and interactive models have replaced the traditional linear model of innovation during the last decade. Yet, heroic innovators and entrepreneurs, unambiguous functionality of products, and a focus on the up-stream aspects of innovation still underlie much discussion on innovation, intellectual property rights, technology policy, and product development. Coherent conceptual, theoretical and practical conclusions from research on knowledge creation, theory of learning, history of technology, and the social basis of innovative change have rarely been made. This book argues that innovation is about creating meaning; that it is inherently social; and is grounded in existing social practices. To understand the social basis of innovation and technology development we have to move beyond the traditional product-centric view on innovations. Integrating concepts from several

disciplinary perspectives and detailed analyses of the evolution of Internet-related innovations, including packet-switched computer networks, World Wide Web, and the Linux open source operating system, the book develops foundations for a new theoretical and practical understanding of innovation. For example, it shows that innovative development can occur in two qualitatively different ways, one based on evolving specialization and the other based on recombination of existing socially produced resources. The expanding communication and collaboration networks have increased the importance of the recombinatory mode making mobility of resources, sociotechnical translation mechanisms, and meaning creation in communities of practice increasingly important for innovation research and product development.

In less than a decade, the Internet went from being a series of loosely connected networks used by universities and the military to the powerful commercial engine it is today. This book describes how many of the key innovations that made this possible came from entrepreneurs and iconoclasts who were outside the mainstream—and how the commercialization of the Internet was by no means a foregone conclusion at its outset. Shane Greenstein traces the evolution of the Internet from government ownership to privatization to the commercial Internet we know today. This is a story of innovation from the edges. Greenstein shows

how mainstream service providers that had traditionally been leaders in the old-market economy became threatened by innovations from industry outsiders who saw economic opportunities where others didn't—and how these mainstream firms had no choice but to innovate themselves. New models were tried: some succeeded, some failed. Commercial markets turned innovations into valuable products and services as the Internet evolved in those markets. New business processes had to be created from scratch as a network originally intended for research and military defense had to deal with network interconnectivity, the needs of commercial users, and a host of challenges with implementing innovative new services. How the Internet Became Commercial demonstrates how, without any central authority, a unique and vibrant interplay between government and private industry transformed the Internet.

This book constitutes the refereed proceedings of the 4th IFIP WG 5.5/SOCOLNET Doctoral Conference on Computing, Electrical and Industrial Systems, DoCEIS 2013, held in Costa de Caparica, Portugal, in April 2013. The 69 revised full papers were carefully reviewed and selected from numerous submissions. They cover a wide spectrum of topics ranging from collaborative enterprise networks to microelectronics. The papers are organized in the following topical sections: collaborative enterprise networks; service orientation;

intelligent computational systems; computational systems; computational systems applications; perceptional systems; robotics and manufacturing; embedded systems and Petri nets; control and decision; integration of power electronics systems with ICT; energy generation; energy distribution; energy transformation; optimization techniques in energy; telecommunications; electronics: devices design; electronics: amplifiers; electronics: RF applications; and electronics: applications.

Technological innovation moves humankind forward and the law follows. This book provides a cohesive and comprehensive look at the law of emerging technologies by examining selected technologies and guidance, standards, statutes, and cases in the United States and Europe. After a brief history of technology's intersection with the law and a framework for understanding any emerging technology, it discusses and analyzes selected emerging technologies. The technologies presented are: social media, mobile computing, BYOD, cloud computing, digital identity, digital authentication, biometrics, critical infrastructure, smart grids, smart meters, the Internet of Things (including smart homes, smart cities, industrial Internet, connected cars, driverless vehicles, smart appliances), Big Data, virtual currencies, distributed ledgers, electronic health records, telemedicine, robots, artificial intelligence, virtual reality, 3D printing, wearables,

mobile health devices, drones, augmented reality, and mobile payments. The book's audience comprises lawyers new to information and Internet law including law students, lawyers updating their knowledge on the latest technologies, guidance, statutes and cases, and lawyers desiring a U.S.-EU comparative legal perspective on emerging technologies law. Completely up-to-date to November 2016 with the latest developments, this book comprehensively surveys the area of emerging technologies law, working seamlessly with its companion book: Information and Internet Law: Global Practice. Bringing a unique and global perspective to explain a complex topic, the author has written numerous books on legal technology and legal history, teaches U.S.-EU comparative information, Internet, and emerging technologies law, and has worked worked in complementary disciplines across the major areas of the world. This book is the result of those many years of experience and insight.

Technology entrepreneurship has been receiving growing importance as an effective instrument to promote national economic growth, both from empirical researchers and policymakers. India has emerged as the third largest base for high-tech start-ups in the world. Although there is a surge in start-up creation rates in India, little is known about factors required for these start-ups to survive, sustain and grow into large enterprises, particularly in the context of emerging

economies like India. This book reviews the entrepreneurial, firm-specific and external environment-specific aspects that influence the key lifecycle stages of high-tech start-ups and identifies the key factors that influence each milestone. Existing literature in this subject has limited studies on the structure of the high-tech start-up sector and processes and strategies adapted by them. This book aims to address this gap, analyzing case studies and empirical data, and provides a multidimensional framework to understand the life cycle of high-tech start-ups.

"This book is for students of the past, present, and future communication system. It is for people in policy, business, and civil society who want to influence change in this system and also for people who are largely unaware that what they do every day is changing this system. I examine some of the causes and consequences of innovations in the modern digital communication system. These have been at the centre of my interest in social transformation for a long time. Investigations of what has come to be known as the information society normally are conducted within disciplinary boundaries in the humanities, social sciences, or natural and physical sciences. In this book, I cross these boundaries, something I have been encouraged to do throughout my career"--Preface, p. [vii]

A detailed examination of how the underlying technical structure of the Internet

affects the economic environment for innovation and the implications for public policy. Today—following housing bubbles, bank collapses, and high unemployment—the Internet remains the most reliable mechanism for fostering innovation and creating new wealth. The Internet's remarkable growth has been fueled by innovation. In this pathbreaking book, Barbara van Schewick argues that this explosion of innovation is not an accident, but a consequence of the Internet's architecture—a consequence of technical choices regarding the Internet's inner structure that were made early in its history. The Internet's original architecture was based on four design principles: modularity, layering, and two versions of the celebrated but often misunderstood end-to-end arguments. But today, the Internet's architecture is changing in ways that deviate from the Internet's original design principles, removing the features that have fostered innovation and threatening the Internet's ability to spur economic growth, to improve democratic discourse, and to provide a decentralized environment for social and cultural interaction in which anyone can participate. If no one intervenes, network providers' interests will drive networks further away from the original design principles. If the Internet's value for society is to be preserved, van Schewick argues, policymakers will have to intervene and protect the features that were at the core of the Internet's success.

In 2017, the new journal Internet Histories was founded. As part of the process of defining a new field, the journal editors approached leading scholars in this dynamic, interdisciplinary area. This book is thus a collection of eighteen short thought-provoking pieces, inviting discussion about Internet histories. They raise and suggest current and future issues in the scholarship, as well as exploring the challenges, opportunities, and tensions that underpin the research terrain. The book explores cultural, political, social, economic, and industrial dynamics, all part of a distinctive historiographical and theoretical approach which underpins this emerging field. The international specialists reflect upon the scholarly scene, laying out the field's research successes to date, as well as suggest the future possibilities that lie ahead in the field of Internet histories. While the emphasis is on researcher perspectives, interviews with leading luminaries of the Internet's development are also provided. As histories of the Internet become increasingly important, Internet Histories is a useful roadmap for those contemplating how we can write such works. One cannot write many histories of the 1990s or later without thinking of digital media – and we hope that Internet Histories will be an invaluable resource for such studies. This book was originally published as the first issue of the Internet Histories journal.

The Internet as we know it today is the result of a continuous activity for improving network

communications, end user services, computational processes and also information technology infrastructures. The Internet has become a critical infrastructure for the human-being by offering complex networking services and end-user applications that all together have transformed all aspects, mainly economical, of our lives. Recently, with the advent of new paradigms and the progress in wireless technology, sensor networks and information systems and also the inexorable shift towards everything connected paradigm, first as known as the Internet of Things and lately envisioning into the Internet of Everything, a data-driven society has been created. In a data-driven society, productivity, knowledge, and experience are dependent on increasingly open, dynamic, interdependent and complex Internet services. The challenge for the Internet of the Future design is to build robust enabling technologies, implement and deploy adaptive systems, to create business opportunities considering increasing uncertainties and emergent systemic behaviors where humans and machines seamlessly cooperate.

An exploration of the diverse experiments in digital futures as they advance far from the celebrated centers of technological innovation and entrepreneurship. In Networking Peripheries, Anita Chan shows how digital cultures flourish beyond Silicon Valley and other celebrated centers of technological innovation and entrepreneurship. The evolving digital cultures in the Global South vividly demonstrate that there are more ways than one to imagine what digital practice and global connection could look like. To explore these alternative developments, Chan investigates the diverse initiatives being undertaken to “network” the nation in contemporary Peru, from attempts to promote the intellectual property of indigenous artisans to the national distribution of digital education technologies to open technology

activism in rural and urban zones. Drawing on ethnographic accounts from government planners, regional free-software advocates, traditional artisans, rural educators, and others, Chan demonstrates how such developments unsettle dominant conceptions of information classes and innovations zones. Government efforts to turn rural artisans into a new creative class progress alongside technology activists' efforts to promote indigenous rights through information tactics; plans pressing for the state wide adoption of open source–based technologies advance while the One Laptop Per Child initiative aims to network rural classrooms by distributing laptops. As these cases show, the digital cultures and network politics emerging on the periphery do more than replicate the technological future imagined as universal from the center.

This book provides a fascinating account of the origins and development of the technology that has transformed telecommunications and broadcasting and created the Internet. It depicts this remarkable human achievement by identifying the key innovators whose ideas created today's world of communications, from the Victorian scientists and mathematicians to the present day engineers. Written in a highly readable style, this book shows the impact of each innovation upon today's world of communications technology, and looks to the future for the innovations to come. The author writes from a unique position as he was a principal player in the development of 20th Century telecommunications engineering.

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.

Managing technological innovations and related policy and strategy issues have been a central focus of the new millennium. This book series presents an interdisciplinary scholarship and dialogue on the management of innovation and technological change in a global context from a

variety of perspectives, including strategic, managerial, behavioral, and policy issues. Papers selected in this volume have four prominent themes: the wide spread interests and the global application of the technological innovation; the practicality of the research on technological innovation implementation to foster success and financial growth; the socio-technical challenges behind innovation and creativity that might outweigh the benefits; and the new principles/practices/perspectives on our understanding of the technological innovation. Contributed by prominent scholars and practitioners from around the world in innovation, management and policy area, this book will become a very useful read for anyone who is interested in learning the most contemporary perspectives on the subject.

This book discusses the innovative and efficient technological solutions for sustainable smart societies in terms of alteration in industrial pollution levels, the effect of reduced carbon emissions, green power management, ecology, and biodiversity, the impact of minimal noise levels and air quality influences on human health. The book is focused on the smart society development using innovative low-cost advanced technology in different areas where the growth in employment and income are driven by public and private investment into such economic activities, infrastructure and assets that allow reduced carbon emissions and pollution, enhanced energy, and resource efficiency and prevention of the loss of biodiversity and ecosystem services. The book also covers the paradigm shift in the sustainable development for the green environment in the post-pandemic era. It emphasizes and facilitates a greater understanding of existing available research i.e., theoretical, methodological, well-established and validated empirical work, associated with the environmental and climate change aspects.

Challenging the popular myth of a present-day 'information revolution', Media Technology and Society is essential reading for anyone interested in the social impact of technological change. Winston argues that the development of new media forms, from the telegraph and the telephone to computers, satellite and virtual reality, is the product of a constant play-off between social necessity and suppression: the unwritten law by which new technologies are introduced into society only insofar as their disruptive potential is limited.

This book presents original contributions on the theories and practices of emerging Internet, Data and Web technologies and their applications in businesses, engineering and academia. As a key feature, it addresses advances in the life-cycle exploitation of data generated by digital ecosystem technologies. The Internet has become the most proliferative platform for emerging large-scale computing paradigms. Among these, Data and Web technologies are two of the most prominent paradigms, manifesting in a variety of forms such as Data Centers, Cloud Computing, Mobile Cloud, Mobile Web Services, and so on. These technologies altogether create a digital ecosystem whose cornerstone is the data cycle, from capturing to processing, analysis and visualization. The need to investigate various research and development issues in this digital ecosystem has been made even more pressing by the ever-increasing demands of real-life applications, which are based on storing and processing large amounts of data. Given its scope, the book offers a valuable asset for all researchers, software developers, practitioners and students interested in the field of Data and Web technologies.

Researchers and students in the management of innovation will find in this book an analytical framework that articulates technological innovation processes and

the creation of new markets. The multiplication of examples and cases helps the reader in better grasping the different aspects of the proposed framework. The focus on information and communication technologies is of high relevance: it enables the reader to put present developments in perspective, and this is especially relevant when discussing ascending innovation and the role of users and uses. Philippe Laredo, Universities of Paris-Est and Manchester, Coordinator of the European PRIME Network of Excellence Patrice Flichy takes the reader on a fascinating tour of the literature on technological innovation. Innovation is situated within the frames of functioning and use, offering rich insights into the strategies, tactics, improvisations and learning which occur through time. He emphasises the dreams and musings of inventors, novelists and the popular media to show how they mediate new technological frames of reference. This book offers an excellent synthesis of the literature and an original historical account of innovation with special reference to information and communication technologies. Robin Mansell, London School of Economics and Political Science, UK In Understanding Technological Innovation, Patrice Flichy s interest is in the genesis of technology. He describes the perspectives and interpretive schemes deployed by historians, sociologists and economists in attempts to understand the determinants, including chance, of the particular forms of products and

systems that have come to dominate the market and play so important a role some would claim dominant in our lives. It is rare to find in one volume so informed a critique of the essential writings of historians of technology, contemporary sociologists and economic historians. His own special interest lies in the development of information technology and he puts his expertise to good use in revealing and contrasting the different perspectives and claims of these three schools. Louis L. Bucciarelli, Massachusetts Institute of Technology, US Working at the interface between interactionist sociology, history and economics, Flichy provides us with a language for charting the evolution of new technologies, as generic technical capabilities are explored, perhaps inspired by visions of societal change, and become stabilised and attached to particular conceptions of use. He offers us an integrated perspective on technological innovation, addressing the influence of history and social context whilst remaining open to the often unanticipated dynamism and surprises that may surround both these trajectories. This book will provide a thoughtful contribution to current debates. The critical literature review will provide a rich and convenient source for advanced teaching and research training. Robin Williams, The University of Edinburgh, UK How do the social sciences address the question of innovation and the relationship between technology and use? This is the core point of this

book which examines critically diverse works, in sociology, history, economics and anthropology, in order to formulate a new approach. This reflection is essentially of a general nature, though the cases used to illustrate the analysis are drawn primarily from the field of ICT. Patrice Flichy studies how the socio-technological actions of the different actors, particularly designers and users, are organized within the same frames of reference. He also introduces a new element into the model by demonstrating how time is involved in technological choices. Understanding Technological Innovation will be essential reading for advanced teaching and research training in the fields of science and technology studies, and media and communication studies.

This book provides an overview of the next generation Internet of Things (IoT), ranging from research, innovation, development priorities, to enabling technologies in a global context. It is intended as a standalone in a series covering the activities of the Internet of Things European Research Cluster (IERC), including research, technological innovation, validation, and deployment. The text builds on the ideas put forward by the European Research Cluster, the IoT European Platform Initiative (IoT-EPI), the IoT European Large-Scale Pilots Programme and the IoT European Security and Privacy Projects, presenting global views and state-of-the-art results regarding the next generation of IoT

research, innovation, development, and deployment. The IoT and Industrial Internet of Things (IIoT) are evolving towards the next generation of Tactile IoT/IIoT, bringing together hyperconnectivity (5G and beyond), edge computing, Distributed Ledger Technologies (DLTs), virtual and augmented reality (VR/AR), and AI transformation. Following the wider adoption of consumer IoT, the next generation of IoT/IIoT innovation for business is driven by industries, addressing interoperability issues and providing new end-to-end security solutions to face continuous treats. The advances of AI technology in vision, speech recognition, natural language processing and dialog are enabling the development of end-to-end intelligent systems encapsulating multiple technologies, delivering services in real-time using limited resources. These developments are focusing on designing and delivering embedded and hierarchical AI solutions in IoT/IIoT, edge computing, using distributed architectures, DLTs platforms and distributed end-to-end security, which provide real-time decisions using less data and computational resources, while accessing each type of resource in a way that enhances the accuracy and performance of models in the various IoT/IIoT applications. The convergence and combination of IoT, AI and other related technologies to derive insights, decisions and revenue from sensor data provide new business models and sources of monetization. Meanwhile, scalable, IoT-

enabled applications have become part of larger business objectives, enabling digital transformation with a focus on new services and applications. Serving the next generation of Tactile IoT/IIoT real-time use cases over 5G and Network Slicing technology is essential for consumer and industrial applications and support reducing operational costs, increasing efficiency and leveraging additional capabilities for real-time autonomous systems. New IoT distributed architectures, combined with system-level architectures for edge/fog computing, are evolving IoT platforms, including AI and DLTs, with embedded intelligence into the hyperconnectivity infrastructure. The next generation of IoT/IIoT technologies are highly transformational, enabling innovation at scale, and autonomous decision-making in various application domains such as healthcare, smart homes, smart buildings, smart cities, energy, agriculture, transportation and autonomous vehicles, the military, logistics and supply chain, retail and wholesale, manufacturing, mining and oil and gas.

A pressing challenge in the modern health care system is the gap between education and clinical practice. Emerging technologies have the potential to bridge this gap by creating the kind of team-based learning environments and clinical approaches that are increasingly necessary in the modern health care system both in the United States and around the world. To explore these

technologies and their potential for improving education and practice, the National Academies of Sciences, Engineering, and Medicine hosted a workshop in November 2017. Participants explored effective use of technologies as tools for bridging identified gaps within and between health professions education and practice in order to optimize learning, performance and access in high-, middle-, and low-income areas while ensuring the well-being of the formal and informal health workforce. This publication summarizes the presentations and discussions from the workshop.

Every day, billions of photographs, news stories, songs, X-rays, TV shows, phone calls, and emails are being scattered around the world as sequences of zeroes and ones: bits. We can't escape this explosion of digital information and few of us want to-the benefits are too seductive. The technology has enabled unprecedented innovation, collaboration, entertainment, and democratic participation. But the same engineering marvels are shattering centuries-old assumptions about privacy, identity, free expression, and personal control as more and more details of our lives are captured as digital data. Can you control who sees all that personal information about you? Can email be truly confidential, when nothing seems to be private? Shouldn't the Internet be censored the way radio and TV are? is it really a federal crime to download music? When you use

Google or Yahoo! to search for something, how do they decide which sites to show you? Do you still have free speech in the digital world? Do you have a voice in shaping government or corporate policies about any of this? Blown to Bits offers provocative answers to these questions and tells intriguing real-life stories. This book is a wake-up call To The human consequences of the digital explosion.

The Web of Things (WoT) is a concept that describes approaches, programming tools and software architectural systems, which interface networks of real-world objects with the World Wide Web. The book is organized into 11 chapters, each focusing on a unique wireless technological aspect of the Web of Things, and it aims to comprehensively cover each of its various applications, including: A strong emphasis on WoT problems and solutions, identifying the main open issues, innovations and latest technologies behind WoT A blend of theoretical and simulation-based problems for better understanding of the concepts behind WoT Various exemplifying applications in which the use of WoT is very attractive and an inspiration for future applications The book will be useful to researchers, software developers and undergraduate and postgraduate students, as well as practitioners.