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C49 - NOEMI MELANY

A thoroughly up-to-date revision of this successful book this text aims to give the professional engineer or graduate student a fully comprehensive yet practical understanding of the principles and technological issues of this major subject. The book contains a strong tutorial element and real-world orientation.

Presents an overview of CubeSat antennas designed at the Jet Propulsion Laboratory (JPL) CubeSats—nanosatellites built to standard dimensions of 10cm x 10 cm x cm—are making space-based Earth science observation and interplanetary space science affordable, accessible, and rapidly deployable for institutions such as universities and smaller space agencies around the world. CubeSat Antenna Design is an up-to-date overview of CubeSat antennas designed at NASA's Jet Propulsion Laboratory (JPL), covering the systems engineering knowledge required to design these antennas from a radio frequency and mechanical perspective. This authoritative volume features contributions by leading experts in the field, providing insights on mission-critical design requirements for state-of-the-art CubeSat antennas and discussing their development, capabilities, and applications. The text begins with a brief introduction to CubeSats, followed by a detailed survey of low-gain, medium-gain, and high-gain antennas. Subsequent chapters cover topics including the telecommunication subsystem of Mars Cube One (MarCO), the enabling technology of Radar in a CubeSat (RainCube), the development of a one-meter mesh reflector for telecommunication at X- and Ka-band for deep space missions, and the design of multiple metasurface antennas. Written to help antenna engineers to enable new CubeSat NASA missions, this volume: Describes the selection of high-gain CubeSat antennas to address specific mission requirements and constraints for instruments or telecommunication Helps readers learn how to develop antennas for future CubeSat missions Provides key information on the effect of space environment on antennas to inform design steps Covers patch and patch array antennas, deployable reflectarray antennas, deployable mesh reflector, inflatable antennas, and metasurface antennas CubeSat Antenna Design is an important resource for antenna/microwave engineers, aerospace systems engineers, and advanced graduate and postdoctoral students wanting to learn how to design and fabricate their own antennas to address clear mission requirements.

Surveys key advances in commercial satellite communications and what might be the implications and/or opportunities for end-users and service providers in utilizing the latest fast-evolving innova-

tions in this field This book explores the evolving technical options and opportunities of satellite networks. Designed to be a self-contained reference, the book includes background technical material in an introductory chapter that will serve as a primer to satellite communications. The text discusses advances in modulation techniques, such as DBV-S2 extensions (DVS-S2X); spotbeam-based geosynchronous and medium earth orbit High Throughput Satellite (HTS) technologies and Internet applications; enhanced mobility services with aeronautical and maritime applications; Machine to Machine (M2M) satellite applications; emerging ultra HD technologies; and electric propulsion. The author surveys the latest innovations and service strategies and the resulting implications, which involves: Discussing advances in modulation techniques and HTS spotbeam technologies Surveying emerging high speed aeronautical mobility services and maritime and other terrestrial mobility services Assessing M2M (machine-to-machine) applications, emerging Ultra HD video technologies and new space technology Satellite communication is an integral part of the larger fields of commercial, television/media, government, and military communications, because of its multicast/broadcast capabilities, mobility, reliability, and global reach. High Throughput Satellites) are expected to revolutionize the field during this decade, providing very high speed, yet cost-effective, Internet access and connectivity anywhere in the world, in rural areas, in the air, and at sea. M2M connectivity, enabled by satellite communications, connects trucks on transcontinental trips, aircraft in real-time-telemetry aggregation, and mercantile ships. A comprehensive analysis of the new advances in satellite communications, Innovations in Satellite Communications Technology is a reference for telecommunication and satellite providers and end-users, technology investors, logistic professionals, and more.

Very small aperture terminals (VSATs) enable satellite transmission to provide data, voice and video communications directly to the user's premises. Networks using VSATs can be set up or changed rapidly in response to varying demands and as such look set to figure highly in the communications of the next century. In this long-awaited book, Everett collects 28 major contributions to describe the key technology, representative leading systems, technical issues and also consider the economics and regulations.

Since the publication of the best-selling first edition of The Satellite Communication Applications Handbook, the satellite communications industry has experienced explosive growth. Satellite radio, direct-to-home satellite television, satellite telephones, and satellite guidance for automobiles are now common and popular consumer products. Similarly, business, government, and defense organi-

zations now rely on satellite communications for day-to-day operations. This second edition covers all the latest advances in satellite technology and applications including direct-to-home broadcasting, digital audio and video, and VSAT networks. Engineers get the latest technical insights into operations, architectures, and systems components.

Iraq is a nation in crisis bordering on civil war. The country now faces growing violence, a steady rise in Sunni Islamist extremism, an increasingly authoritarian leader that favors Iraq's Sunnis, and growing ethnic tension between Arabs and Kurds. The recent Iraqi election offers little promise that it can correct the corruption, the weaknesses in its security forces, and the critical failures in governance, economic development, and leadership. The problems Iraq faces in 2014 are a legacy of mistakes made during and after the U.S.-led invasion in 2003, but increasingly the nation is dealing with the self-inflicted wounds of its leaders who abuse human rights, repress opposing factions, and misuse the Iraqi police and security forces to their own end.

This book presents principal structures of space systems functionality of meteorological networks, media and applications for modern remote sensing, transmission systems, meteorological ground and users segments and transferring weather data from satellite to the ground infrastructures and users. The author presents techniques and different modes of satellite image interpretation, type of satellite imagery, spectral imaging properties, and enhancement of imaging technique, geo-location and calibration, atmospheric and surface phenomena. Several satellite meteorological applications are introduced including common satellite remote sensing applications, weather analysis, warnings and prediction, observation and measurements of meteorological variables, atmosphere and surface applications, ocean and coastal applications, land, agriculture and forestry applications, and maritime and aviation satellite weather applications. The author also covers ground segment and user segment in detail. The final chapter looks to the future, covering possible space integrations in meteorological and weather observation. This is a companion book of *Global Satellite Meteorological Observation Theory* (Springer), which provides the following topics: Evolution of meteorological observations and history satellite meteorology Space segment with satellite orbits and meteorological payloads Analog and digital transmission, type of modulations and broadcasting systems Atmospheric radiation, satellite meteorological parameters and instruments Meteorological antenna systems and propagation

This book describes satellites, satellites systems and the used waveforms. It shall help to identify unknown signals which can be received today. Digital waveforms like FSK, PSK, DSSS aso. with the used protocols and alphabets are described with the help of spectrum and other pictures and the most important technical parameter.

With increased consumer use and adoption, mobile communication technologies are faced with the challenge of creating an adequate wireless networking architecture that can support a high degree of scalability, performance, and reliability in a cost-effective manner without comprising security or quality of service. *Self-Organized Mobile Communication Technologies and Techniques for Network Optimization* explores self-organizing networks (SONs) as a proposed solution for the automation of mobile communication tasks that currently require significant efforts for planning, operation, and management. Emphasizing research on the latest generation of mobile communication networks, the 5th generation (5G), this publication proposes timely solutions and presents the latest developments

in the field of mobile communication technologies. IT developers, engineers, graduate-level students, and researchers will find this publication to be essential to their research needs.

This publication provides a summary of the key methodological issues surrounding indicators and statistics on the space sector and the larger space economy.

This authoritative book provides a thorough understanding of the fundamental concepts of satellite communications (SATCOM) network design and performance assessments. You find discussions on a wide class of SATCOM networks using satellites as core components, as well as coverage key applications in the field. This in-depth resource presents a broad range of critical topics, from geosynchronous Earth orbiting (GEO) satellites and direct broadcast satellite systems, to low Earth orbiting (LEO) satellites, radio standards and protocols. This invaluable reference explains the many specific uses of satellite networks, including small-terminal wireless and mobile communications systems. Moreover, this book presents advanced topics such as satellite RF link analyses, optimum transponder loading, on-board processing, antenna characteristics, protected systems, information assurance, and spread spectrums. You are introduced to current and future SATCOM systems and find details on their performance supportabilities. This cutting-edge book also presents trends in multimedia satellite applications and IP services over satellites.

The book covers all the fundamentals of satellites, ground control systems, and earth stations, considering the design and operation of each major segment. You gain a practical understanding of the basic construction and usage of commercial satellite networks. How parts of a satellite system function, how various components interact, which role each component plays, and which factors are the most critical to success."

The results of the official Congressional investigation into the government's preparation for and response to Hurricane Katrina in 2005.

This book provides insights into the Third International Conference on Intelligent Systems and Signal Processing (eISSP 2020) held By Electronics & Communication Engineering Department of G H Patel College of Engineering & Technology, Gujarat, India, during 28-30 December 2020. The book comprises contributions by the research scholars and academicians covering the topics in signal processing and communication engineering, applied electronics and emerging technologies, Internet of Things (IoT), robotics, machine learning, deep learning and artificial intelligence. The main emphasis of the book is on dissemination of information, experience and research results on the current topics of interest through in-depth discussions and contribution of researchers from all over world. The book is useful for research community, academicians, industrialists and postgraduate students across the globe.

The United States faces major challenges in dealing with Iran, the threat of terrorism, and the tide of political instability in the Arabian Peninsula. The presence of some of the world's largest reserves of oil and natural gas, vital shipping lanes, and Shia populations throughout the region have made the peninsula the focal point of US and Iranian strategic competition.

Attract New Customers and Exceed Revenue Goals with iDirect Marketing! "A simple concept ties this incredibly useful book together. Every marketer now is an iDirect marketer. You ignore this concept, and this book, at your own peril." Al Ries, author of *War in the Boardroom* "How do you get your brand heard, trusted, and remembered? The answer is in the confluence of digital and direct to

form a torrent of minimal cost/maximal result opportunities. Rapp's vision of an iDirect future and the insights of the book's contributors put marketing supremacy in your grasp." Tim Suther, SVP, Acxiom Global Multichannel Marketing Services "The internet brings about the reinvention of everything. Now it is marketing's turn. Rapp compiles the best thinking on a future with low-cost and no-cost connections between products and consumers. Essential reading for marketers." Chris Anderson, author of *The Long Tail* "Direct marketing is interactive, and interactive marketing is direct. With an 'iDirect' mindset, digital platforms and innovative analytics impact the data-driven, online, offline, lead-generating, customer-retaining, multichannel direct marketing process. Rapp's vision for reinventing marketing is a wake-up call for CMOs to think and act differently in a profoundly changed world." John Greco, President and CEO, Direct Marketing Association "It's increasingly important to rely on an agency for accountable iDirect solutions. The advertising agency of the future must be adept at reinventing yesterday's interactive, direct and branding. Rapp's cohort of experts show the way in this book." Michael McCathren, Chick-fil-A Conversation Catalyst About the Book *Reinventing Interactive and Direct Marketing* focuses on how to benefit from a fundamental truth about marketing in the digital era. Interactive Marketing is direct. Direct Marketing is interactive. What has been seen mistakenly as separate disciplines actually are one and the same. Every marketer now is an interactive direct marketer. To help you profit from this new reality, Stan Rapp introduces a new paradigm—iDirect—the 21st-century growth engine at the intersection of digital technologies and direct marketing practices. The gap between what you once took for granted and the iDirect Marketing future is so vast that a team of thought leaders is needed to deal with it. No one person has all the answers. In this book, Rapp brings together marketing luminaries with a variety of perspectives that will open your eyes to astonishing, new opportunities. It contains surprising insights from the top minds in direct marketing, including: John Greco, President of the Direct Marketing Association: *How to Market Directly or Be Left Behind* Professor Don Shultz, PhD, Northwestern University: *Media Allocation for a Mass Networking Landscape* Lucas Donat, President, Donat/Wald: *ROIpositive Advertising via TV and Print for the iDirect Marketer* Mike Caccavale, Founder and CEO, Pluris Marketing: *Instant Delivery of Thousands of Individualized Messages* Michael Becker, VP Mobile Strategies, iLoop Mobile: *Hold the Consumer in the Palm of Your Hand with Mobile* Melissa Read, PhD, Vice President of Research and Innovation, Engauge: *The Psychology of Motivating Desired Behavior On- and Offline* Tim Suther, Acxiom SVP Global Multichannel Marketing Services: *Releasing the Full Power of iDirect Fundamentals*

Space Security involves the use of space (in particular communication, navigation, earth observation, and electronic intelligence satellites) for military and security purposes on earth and also the maintenance of space (in particular the earth orbits) as safe and secure areas for conducting peaceful activities. The two aspects can be summarized as "space for security on earth" and "the safeguarding of space for peaceful endeavors." The Handbook will provide a sophisticated, cutting-edge resource on the space security policy portfolio and the associated assets, assisting fellow members of the global space community and other interested policy-making and academic audiences in keeping abreast of the current and future directions of this vital dimension of international space policy. The debate on coordinated space security measures, including relevant 'Transparency and Confidence-Building Measures,' remains at a relatively early stage of development. The book offers a com-

prehensive description of the various components of space security and how these challenges are being addressed today. It will also provide a number of recommendations concerning how best to advance this space policy area, given the often competing objectives of the world's major space-faring nations. The critical role to be played by the United States and Europe as an intermediary and "middle diplomat" in promoting sustainable norms of behavior for space will likewise be highlighted. In providing a global and coherent analytical approach to space security today, the Handbook focuses on four areas that together define the entire space security area: policies, technologies, applications, and programs. This structure will assure the overall view of the subject from its political to its technical aspects. Internationally recognized experts in each of the above fields contribute, with their analytical synthesis assured by the section editors.

Connecting Networks v6 Companion Guide is the official supplemental textbook for the Connecting Networks version 6 course in the Cisco Networking Academy CCNA Routing and Switching curriculum. The Companion Guide is designed as a portable desk reference to use anytime, anywhere to reinforce the material from the course and organize your time. The book's features help you focus on important concepts to succeed in this course: Chapter Objectives—Review core concepts by answering the focus questions listed at the beginning of each chapter. Key Terms—Refer to the lists of networking vocabulary introduced and highlighted in context in each chapter. Glossary—Consult the comprehensive Glossary with 347 terms. Summary of Activities and Labs—Maximize your study time with this complete list of all associated practice exercises at the end of each chapter. Check Your Understanding—Evaluate your readiness with the end-of-chapter questions that match the style of questions you see in the online course quizzes. The answer key explains each answer. How To—Look for this icon to study the steps you need to learn to perform certain tasks. Interactive Activities—Reinforce your understanding of topics with dozens of exercises from the online course identified throughout the book with this icon. Packet Tracer Activities—Explore and visualize networking concepts using Packet Tracer exercises interspersed throughout the chapters and provided in the accompanying Labs & Study Guide book. Videos—Watch the videos embedded within the online course. Hands-on Labs—Work through all the course labs and additional Class Activities that are included in the course and published in the separate Labs & Study Guide.

This book is intended to assist to improve energy efficiency in the industrial sector. The book offers case studies for industrial energy efficiency improvement and contains brief reports on cutting-edge research in all fields of the energy industry. This book, which is composed of select research proceedings of the EMMFT 2019 conference, covers such issues as: good quality energy use, energy generation technologies, materials used for energy generation, and storage technologies, as well as materials for water purification, petroleum engineering, and digital energy systems. The case studies discussed comprise the use of fossil fuel and non-fossil fuel energy resources, novel materials with advanced heat transport or heat resistance, and energy digitalization. Coverage extends to all theoretical and applied aspects of the field. This book is an ideal resource for scientists and energy analysts, industrial practitioners, engineers, researchers, and postgraduate students working in the field of management and technology for improving energy efficiency in the industry. Also, the book is of interest to researchers, engineers, and laboratory personnel in the fields of power systems and smart grids.

Radiowave Propagation in Communications was written with two basic objectives: (1) to present an up-to-date review of the major radiowave propagation phenomena which hinder reliable space communications, and (2) to describe how these propagation phenomena affect the design and performance of satellite communications systems. Earth-orbiting satellites are employed extensively for the relay of information in a vast array of telecommunications, meteorological, government, and scientific applications. Satellite systems rely on the transmission of radiowaves to and from the satellite and are dependent on the propagation characteristics of the transmission path, primarily the earth's atmosphere. Radiowave propagation thus plays a very important part in the design and ultimate performance of space communications systems. This book presents, for the first time, the meshing in a single publication of the fundamentals of radiowave propagation factors with a discussion of the practical consequences of these factors on satellite communications systems. Two major subfields are involved in this book. Radiowave propagation, which is basically applied electromagnetic theory, provides the theory and analytical tools for the first several chapters. Later chapters then apply propagation effects to the field of electrical engineering involved with satellite communications. The material progresses from the essential aspects of radiowave propagation to the application of practical methods and techniques in the design and performance of satellite communications systems.

This book provides a timely and comprehensive overview of the introduction of LTE technology for PPDR communications. It describes the operational scenarios and emerging multimedia and data-centric applications in demand and discusses the main techno-economic drivers that are believed to be pivotal for an efficient and cost-effective delivery of mobile broadband PPDR communications. The capabilities and features of the LTE standard for improved support of mission-critical communications (e.g., proximity services, group communications) are covered in detail. Also, different network implementation options to deliver mobile broadband PPDR communications services over dedicated or commercial LTE-based networks are discussed, including the applicability of the Mobile Virtual Network Operator (MVNO) model and other hybrid models. Radio spectrum matters are also discussed in depth, outlining spectrum needs and providing an outlook into allocated and candidate spectrum bands for PPDR communications and suitable dynamic spectrum sharing solutions in PPDR communications. Explanations are accompanied by a vast collection of references that allow the more intrigued reader to gain further insight into the addressed topics.

Epi Info is a free computer program from the Centers for Disease Control and Prevention (CDC), downloaded 2 million times since 1998, and referred to in over 1 million web pages. It allows anyone with a computer to design a questionnaire, enter data, and do tabulation and statistical analysis. This book tells how to use Epi Info for rapid surveys and research studies and for constructing electronic medical records, public health surveillance systems, graphs, and maps. Sample programs can be downloaded from the web.

Turbo Code Applications: a journey from a paper to realization presents contemporary applications of turbo codes in thirteen technical chapters. Each chapter focuses on a particular communication technology utilizing turbo codes, and they are written by experts who have been working in related areas from around the world. This book is published to celebrate the 10 year anniversary of turbo codes invention by Claude Berrou Alain Glavieux and Punya Thitimajshima (1993-2003). As known for more than a decade, turbo code is the astonishing error control coding scheme which its performance

performance closes to the Shannon's limit. It has been honored consequently as one of the seventeen great innovations during the first fifty years of information theory foundation. With the amazing performance compared to that of other existing codes, turbo codes have been adopted into many communication systems and incorporated with various modern industrial standards. Numerous research works have been reported from universities and advance companies worldwide. Evidently, it has successfully revolutionized the digital communications. Turbo code and its successors have been applied in most communications starting from the ground or terrestrial systems of data storage, ADSL modem, and fiber optic communications. Subsequently, it moves up to the air channel applications by employing to wireless communication systems, and then rises up to the space by using in digital video broadcasting and satellite communications. Undoubtedly, with the excellent error correction potential, it has been selected to support data transmission in space exploring system as well.

This book is based on a series of conferences on Wireless Communications, Networking and Applications that have been held on December 27-28, 2014 in Shenzhen, China. The meetings themselves were a response to technological developments in the areas of wireless communications, networking and applications and facilitate researchers, engineers and students to share the latest research results and the advanced research methods of the field. The broad variety of disciplines involved in this research and the differences in approaching the basic problems are probably typical of a developing field of interdisciplinary research. However, some main areas of research and development in the emerging areas of wireless communication technology can now be identified. The contributions to this book are mainly selected from the papers of the conference on wireless communications, networking and applications and reflect the main areas of interest: Section 1 - Emerging Topics in Wireless and Mobile Computing and Communications; Section 2 - Internet of Things and Long Term Evolution Engineering; Section 3 - Resource Allocation and Interference Management; Section 4 - Communication Architecture, Algorithms, Modeling and Evaluation; Section 5 - Security, Privacy, and Trust; and Section 6 - Routing, Position Management and Network Topologies.

This updated and expanded second edition reflects the state of earth station design and ground segment architecture. From international telephone network gateways to direct broadcast home receivers, today's broad range of ground systems and devices require satellite communication engineers and business managers to have a broad and sound understanding of the design and operating principles of earth stations and ground control facilities. This book explores the delivery end of the satellite link and its relationship to delivery of services. Authored by a leading authority in the field, the book provides engineers and managers with the knowledge they need to devise their own approach to implementing and managing earth stations and the overall ground segment. Readers find practical guidance in an array of critical areas, including: preparing requirements, performing preliminary analyses, reviewing hardware designs, managing the introduction of the overall ground segment, and more.

Global mobile satellite communications (GMSC) are specific satellite communication systems for maritime, land and aeronautical applications. It enables connections between moving objects such as ships, vehicles and aircrafts, and telecommunications subscribers through the medium of communications satellites, ground earth stations, PTT or other landline telecommunications providers. Mobile satellite communications and technology have been in use for over two decades. Its initial applica-

tion is aimed at the maritime market for commercial and distress applications. In recent years, new developments and initiatives have resulted in land and aeronautical applications and the introduction of new satellite constellations in non-geostationary orbits such as Little and Big LEO configurations and hybrid satellite constellations as Ellipso Borealis and Concordia system. This book is important for modern shipping, truck, train and aeronautical societies because GMSC in the present millennium provides more effective business and trade, with emphasis on safety and commercial communications. Global Mobile Satellite Communications is written to make bridges between potential readers and current GMSC trends, mobile system concepts and network architecture using a simple mode of style with understandable technical information, characteristics, graphics, illustrations and mathematics equations. Global Mobile Satellite Communications represents telecommunications technique and technology, which can be useful for all technical staff on vessels at sea and rivers, on all types of land vehicles, on planes, on off shore constructions and for everyone possessing satellite communications handset phones.

The deployment of 4G/LTE (Long-Term Evolution) mobile networks has solved the major challenge of high capacities to build a real broadband mobile internet. This was possible mainly through a very strong physical layer and flexible network architecture. However, bandwidth-hungry services such as virtual reality (VR) and augmented reality (AR), have been developed in an unprecedented way. Furthermore, mobile networks are facing other new services with extreme demand for greater reliability and almost zero-latency performance, like vehicle communications and the Internet of Vehicles (IoV). Therefore, industries and researchers are investigating new physical layers and softwarization techniques and including more intelligence in 5G and beyond 5G (B5G/6G). This book discusses some of these softwarization techniques, such as fog computing, cloud computing, and artificial intelligence (AI) and machine learning (ML). It also presents use cases showing practical aspects from 5G deployment scenarios, where other communications technologies will co-habit to build the landscape of next-generation mobile networks (NGMNs).

Macgregor's study economically and convincingly makes the case for the inescapable importance of land forces in wars of the future and, no less important, in the deterrence of such wars.

The impact of space exploration activities upon society to space tourism leisure needAs the 21st century gets further underway, the impact of space activities upon the welfare of humanity will only increase. The period between 1957 yr. and 1991 yr. saw the space age with flights to the planets, footprints on the moon and global communications; even military space exploration. In the not clean solar energy from space powering our industries as well as heating and lighting our homes. Our nuclear waste may be safely and inexpensively disposed of by being carried up a space Elevator and released towards Earth Orbit or on the Moon. We may carry out the development of a multi-planet economy. In addition to the knowledge that space exploration has already delivered, space technologies have become integrated into everyday life so deeply that modern society could not function without them. Weather, telecommunications, environmental analysis and national security are only the most obvious space technologies that humanity relies on, and transfers from space to non space sectors provide many additional indirect benefits. The basic activities required to develop and maintain the fundamental elements on which a space policy depends for its implementation (access to space, the technology base, industrial capabilities, ground facilities); the activities of sciences and

human and robotic exploration; and utilitarian activities are developing space systems to support public services, such as meteorology, environment, natural disaster prediction management, online education studying, wind, nuclear and water energy and agriculture growing and plant breeding research and commercial offering, such as distance long phone, internet, mobile telecommunications, GPS navigation and imagery for the benefit of the citizen. Thus the impact of space activities upon society has largely been measured in numerical terms. How many spacecraft have been launched by a given country? How many phone calls are made over a satellite? How many lives could be saved by hurricane watching satellites? How much money was spent on space within a given country or by a corporation? The problem with this approach is that generally, the value to humanity is not measured and the value and benefits of such space activities must be justified. For the purposes of such space exploration technologies and researching new materials become cheap enough or feasible enough to do so. The aims of space exploration include one world perspective, challenges for life, knowledge development, educational stimulation, communications for all revitalization of the human spirit after and contributing, such as distance learning. On the education hand, the stimulation of education and proactive outreach has been a historic strength of the space exploration. On the communication hand, communications for all revitalization, such as the space field has matured, the innate human desire to communicate has grown ever more significant. The need to transmit data, information and knowledge. For example, the communication with a spacecraft beyond the solar system or with a friend by mobile phone. Though television, we can watch wars in real time as soldiers and hurt people who are being conducted on the ground, we can witness the sport players at the Olympic Games, we listen to latest news on the radio when driving in our cars. The ability to communicate easily and quickly with ships at seas, aircrafts in mid-flight or a relative on the other side communications technologies developed for space. On the one world perspective hand, the people of the world saw the blue marble of the Earth as on Earth rise from the window of Apollo 8.

In the past decade, the field of small satellites has expanded the space industry in a powerful way. Hundreds, indeed thousands, of these innovative and highly cost-efficient satellites are now being launched from Earth to establish low-cost space systems. These smallsats are engaged in experiments and prototype testing, communications services, data relay, internet access, remote sensing, defense and security related services, and more. Some of these systems are quite small and are simple student experiments, while others in commercial constellations are employing state-of-the-art technologies to deliver fast and accurate services. This handbook provides a comprehensive overview of this exciting new field. It covers the technology, applications and services, design and manufacture, launch arrangements, ground systems, and economic and regulatory arrangements surrounding small satellites. The diversity of approach in recent years has allowed for rapid innovation and economic breakthroughs to proceed at a pace that seems only to be speeding up. In this reference work, readers will find information pertaining to all aspects of the small satellite industry, written by a host of international experts in the field.

Course OverviewThis course provides guidance to individuals and organizations on how to improve the security in your workplace. No workplace-be it an office building, construction site, factory floor, or retail store-is immune from security threats. Employees are often the target of these threats as well as the organization's first line of defense against them. Threats endanger the confidentiality, in-

tegrity, and security of your workplace, as well as your virtual workplace and computer systems. This course presents information on how employees can contribute to your organization's security. Course Objectives: Upon completing this course, the participant will be able to: Identify potential risks to workplace security. Describe measures for improving workplace security. Determine the actions to take in response to a security situation Primary Audience All private-sector and public-sector employees.

Water systems are building blocks for poverty alleviation, shared growth, sustainable development, and green growth strategies. They require data from in-situ observation networks. Budgetary and other constraints have taken a toll on their operation and there are many regions in the world where the data are scarce or unreliable. Increasingly, remote sensing satellite-based earth observation is becoming an alternative. This book briefly describes some key global water challenges, perspectives for remote sensing approaches, and their importance for water resources-related activities. It describes eight key types of water resources management variables, a list of sensors that can produce such information, and a description of existing data products with examples. Earth Observation for Water Resources Management provides a series of practical guidelines that can be used by project leaders to decide whether remote sensing may be useful for the problem at hand and suitable data sources to consider if so. The book concludes with a review of the literature on reliability statistics of remote-sensed estimations.

Electromagnetic Wave Propagation Through Rain was written to help system designers in such fields as meteorology, telecommunications, radar, and aircraft guidance systems face the challenge of predicting and compensating for these potentially serious weather-related effects on communication or remote sensing systems around the world and above the surface of the earth. Electromagnetic Wave Propagation Through Rain describes and analyzes the interaction between electromagnetic waves and various forms of precipitation. Interdisciplinary in approach, this book provides a solid in-depth treatment of the underlying physics as well as applications in communications, the aerospace industry, and meteorology.

This book discusses global mobile satellite communications (GMSC) for maritime, land (road and rail), and aeronautical applications. It covers how these enable connections between moving objects such as ships, road and rail vehicles and aircrafts on one hand, and ground telecommunications subscribers through the medium of communications satellites, ground earth stations, Terrestrial Telecommunication Networks (TTN), Internet Service Providers (ISP) and other wireless and landline telecommunications providers. The new edition covers new developments and initiatives that have resulted in land and aeronautical applications and the introduction of new satellite constellations in

non-geostationary orbits and projects of new hybrid satellite constellations. The book presents current GMSC trends, mobile system concepts and network architecture using a simple mode of style with understandable technical information, characteristics, graphics, illustrations and mathematics equations. It represents telecommunications technique and technology, which can be useful for all technical staff on vessels at sea and rivers, on all types of land vehicles, on planes, on off shore constructions and for everyone possessing satellite communications handset phones. The first edition of Global Mobile Satellite Communications (Springer, 2005) was split into two books for the second edition – one on applications and one on theory. This book presents global mobile satellite communications applications.

The First to Present 3D Technology as Applied to Commercial Programming for the Consumer This is the first book to provide an overview of the technologies, standards, and infrastructure required to support the rollout of commercial real-time 3 Dimension Television/3 Dimension Video (3DTV/3DV) services. It reviews the required standards and technologies that have emerged—or are just emerging—in support of such new services, with a focus on encoding mechanisms formats and the build-out of the transport infrastructure. While there is a lot of academic interest in various intrinsic aspects of 3DTV, service providers and consumers ultimately tend to take a system-level view. 3DTV stakeholders need to consider the overall architectural system-level view of what it will take to deploy an infrastructure that is able to reliably and cost-effectively deliver a commercial-grade quality bundle of multiple 3DTV content channels to paying customers with high expectations. This text, therefore, takes such a system-level view, revealing how to actually deploy the technology. Presented in a self-contained, tutorial fashion, the book begins with a review of 3DTV in the marketplace and the opportunities and challenges therein. Recent industry events related to 3D are also discussed. From there, the fundamental visual concepts supporting stereographic perception of 3DTV/3DV are explained, as are encoding approaches. Readers will understand frame mastering and compression for conventional stereo video (CSV) and more advanced methods such as video plus depth (V+D), multi-view video plus depth (MV+D), and layered depth video (LDV). Next, the elements of an end-to-end 3DTV system are covered from a satellite delivery perspective, with explanations of digital video broadcasting (DVB) and DVB-handheld. Transmission technologies are assessed for terrestrial and IPTV-based architecture; IPv6 is reviewed in detail. Finally, the book presents 3DTV/3DV standardization and related activities, which are critical to any type of broad deployment. System planners, the broadcast TV industry, satellite operators, Internet service providers, terrestrial telecommunication carriers, content developers, design engineers, venture capitalists, and students and professors are among those stakeholders in these services, and who will rely on this volume to discover the latest 3D advances, market opportunities, and competing technologies.