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The inadequate use of wireless spectrum resources has recently motivated researchers and

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practitioners to look for new ways to improve resource efficiency. As a result, new cognitive radio technologies have been proposed as an effective solution. The Handbook of Research on Software-Defined

Read Online
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and Cognitive Radio
Technologies for
Dynamic Spectrum
Management
examines the
emerging
technologies being
used to overcome
radio spectrum
scarcity. Providing
timely and
comprehensive

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coverage on topics pertaining to channel estimation, spectrum sensing, communication security, frequency hopping, and smart antennas, this research work is essential for use by educators, industrialists, and

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graduate students,
as well as
academicians
researching in the
field.

This book provides a
comprehensive
overview of the
latest research and
standardization
progress towards the
5th generation (5G)

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of mobile communications technology and beyond. It covers a wide range of topics from 5G use cases and their requirements, to spectrum, 5G end-to-end (E2E) system architecture including core

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network (CN),
transport network
(TN) and radio
access network
(RAN) architecture,
network slicing,
security and network
management. It
further dives into the
detailed functional
design and the
evaluation of

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different 5G concepts, and provides details on planned trials and pre-commercial deployments across the globe. While the book naturally captures the latest agreements in 3rd Generation Partnership Project

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(3GPP) New Radio (NR) Release 15, it goes significantly beyond this by describing the likely developments towards the final 5G system that will ultimately utilize a wide range of spectrum bands, address all

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envisioned 5G use cases, and meet or exceed the International Mobile Telecommunications (IMT) requirements for the year 2020 and beyond (IMT-2020). 5G System Design: Architectural and Functional

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Considerations and Long Term Research is based on the knowledge and consensus from 158 leading researchers and standardization experts from 54 companies or institutes around the globe, representing key mobile network

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operators, network vendors, academic institutions and regional bodies for 5G. Different from earlier books on 5G, it does not focus on single 5G technology components, but describes the full 5G system design from E2E architecture to

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detailed functional design, including details on 5G performance, implementation and roll-out.

This book constitutes the refereed proceedings of the 14th International Conference on Cognitive Radio-

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Oriented Wireless
Networks,
CROWNCOM 2019,
held in Poznan,
Poland, in June
2019. The 30 revised
full papers were
selected from 48
submissions and
present a large
scope of research
topic also covering

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IoT in 5G and how cognitive mechanisms shall help leveraging access for numerous devices; mmWave and how specific propagation and operation in these bands bring new sharing mechanisms ; how resource

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allocation amongst bands (including offload mechanisms) shall be solved. The key focus will be on how rich data analysis can improve the delivery of above defined services. This book constitutes the refereed proceedings of the

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4th International
Conference on
Computational
Intelligence,
Communications,
and Business
Analytics, CICBA
2022, held in
Silchar, India, in
January 2022. The
21 full papers and
13 short papers

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presented in this volume were carefully reviewed and selected from 107 submissions. The papers are organized in topical sections on computational intelligence; computational intelligence in

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communication; and
computational
intelligence in
analytics.

Second International
Conference, ICT4DA
2019, Bahir Dar,
Ethiopia, May
28-30, 2019, Revised
Selected Papers
Cooperative Radio
Communications for

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Green Smart
Environments
Architectural and
Functional
Considerations and
Long Term Research
Business
Opportunities and
Deployment
Challenges
Cooperative
Networking and

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Resource Allocation
ICSCS 2015, Volume
2

A Research and
Development
Perspective

*The topics
covered in this
book, written by
researchers at
the forefront of
their field,
represent some*

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*of the most
relevant
research areas
in modern coding
theory: codes
and
combinatorial
structures,
algebraic
geometric codes,
group codes,
quantum codes,
convolutional
codes, network*

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*coding and
cryptography.
The book
includes a
survey paper on
the
interconnections
of coding theory
with constrained
systems, written
by an invited
speaker, as well
as 37 cutting-
edge research*

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*communications
presented at the
4th
International
Castle Meeting
on Coding Theory
and Applications
(4ICMCTA), held
at the Castle of
Palmela in
September 2014.
The event's
scientific
program*

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*consisted of
four invited
talks and 39
regular talks by
authors from 24
different
countries. This
conference
provided an
ideal
opportunity for
communicating
new results,
exchanging*

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*ideas,
strengthening
international
cooperation, and
introducing
young
researchers into
the coding
theory
community.*

*A comprehensive
introduction to
ICA for students
and practitioners*

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Independent Component Analysis (ICA) is one of the most exciting new topics in fields such as neural networks, advanced statistics, and signal processing. This is the first book to provide

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*a comprehensive
introduction to
this new
technique
complete with
the fundamental
mathematical
background
needed to
understand
and utilize it.
It offers a
general overview
of the basics of*

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ICA, important solutions and algorithms, and in-depth coverage of new applications in image processing, tele communications, audio signal processing, and more.

*Independent
Component*

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*Analysis is
divided into
four sections
that cover: **

- General
mathematical
concepts
utilized in the
book **
- The basic
ICA model and
its solution **
- Various
extensions of
the basic ICA*

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*model * Real-
world*

*applications for
ICA models*

Authors

Hyvarinen,

Karhunen, and

Oja are well

known for their

contributions to

the development

of ICA and here

cover all

therelevant

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theory, new algorithms, and applications in various fields. Researchers, students, and practitioners from a variety of disciplines will find this accessible volume both helpful and informative.

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*This book
constitutes the
proceedings of
the Second
International
Conference on
Information and
Communication
Technology for
Development for
Africa, ICT4DA
2019, held in
Bahir Dar,
Ethiopia, in May*

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2019. The 29
revised full
papers presented
were carefully
reviewed and
selected from 69
submissions. The
papers address
the impact of
ICT in fostering
economic
development in
Africa. In
detail they

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*cover the
following
topics:
artificial
intelligence and
data science;
wireless and
mobile
computing; and
Natural Language
Processing.*

*This book
constitutes
revised papers*

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*from the twelve
International
Workshops held
at the 17th
International
Conference on
Business Process
Management, BPM
2019, in Vienna,
Austria, in
September 2019:
The third
International
Workshop on*

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*Artificial
Intelligence for
Business Process
Management*

*(AI4BPM) The
third*

*International
Workshop on
Business*

*Processes Meet I
nternet-of-*

*Things (BP-Meet-
IoT) The 15th*

International

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*Workshop on
Business Process
Intelligence
(BPI) The first
International
Workshop on
Business Process
Management in
the era of
Digital
Innovation and
Transformation
(BPMInDIT) The
12th*

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*International
Workshop on
Social and Human
Aspects of
Business Process
Management
(BPMS2) The 7th
International
Workshop on
Declarative,
Decision and
Hybrid
approaches to
processes*

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*(DEC2H) The
second
International
Workshop on
Methods for
Interpretation
of Industrial
Event Logs
(MIEL) The first
International
Workshop on
Process
Management in
Digital*

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Production (PM-DiPro) The second International Workshop on Process-Oriented Data Science for Healthcare (PODS4H) The fourth International Workshop on Process Querying (PQ) The second

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*International
Workshop on
Security and
Privacy-enhanced
Business Process
Management*

*(SPBP) The first
International
Workshop on the
Value and
Quality of
Enterprise
Modelling*

(VEnMo) Each of

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*the workshops
discussed
research still
in progress and
focused on
aspects of
business process
management,
either a
particular
technical aspect
or a particular
application
domain. These*

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*proceedings
present the work
that was
discussed during
the workshops.*

*Millimeter Wave
Communication
Systems*

*The Telecommunic
ations Handbook
Practical*

*Approaches for
RF Impairments
Reduction*

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*A Comprehensive
Compilation of
Decisions,
Reports, Public
Notices, and
Other Documents
of the Federal
Communications
Commission of
the United
States
Cognitive Radio
and Interference
Management:*

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*Technology and
Strategy
Proceedings of
the
International
Conference on
Soft Computing
Systems
ESSCIRC 2021 -
IEEE 47th
European Solid
State Circuits
Conference
(ESSCIRC) .*

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LTE- A and Next
Generation Wireless
Networks:
Channel Modeling and
Performance describes
recent advances
in propagation and
channel modeling
necessary for simulating
next generation wireless
systems. Due to the
radio spectrum
scarcity, two
fundamental changes are

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anticipated compared to the current status. Firstly, the strict reservation of a specific band for a unique standard could evolve toward a priority policy allowing the co-existence of secondary users in a band allocated to a primary system.

Secondly, a huge increase of the number of cells is expected by combining outdoor base

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stations with smaller cells such as pico/femto cells and relays. This evolution is accompanied with the emergence of cognitive radio that becomes a reality in terminals together with the development of self-organization capabilities and distributed cooperative behaviors. The book is divided into

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three parts: Part I addresses the fundamentals (e.g. technologies, channel modeling principles etc.) Part II addresses propagation and modeling discussing topics such as indoor propagation, outdoor propagation, etc. Part III explores system performance and applications (e.g. MIMO

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Over-the-air testing, electromagnetic safety, etc).

This is a comprehensive reference for readers wanting to learn about the entire range of relevant aspects in wireless communications.

The demand for mobile connectivity is continuously increasing, and by 2020 Mobile and

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Wireless

Communications will serve not only very dense populations of mobile phones and nomadic computers, but also the expected multiplicity of devices and sensors located in machines, vehicles, health systems and city infrastructures. Future Mobile Networks are then faced with many

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new scenarios and use cases, which will load the networks with different data traffic patterns, in new or shared spectrum bands, creating new specific requirements. This book addresses both the techniques to model, analyse and optimise the radio links and transmission systems in such scenarios, together

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with the most advanced radio access, resource management and mobile networking technologies. This text summarises the work performed by more than 500 researchers from more than 120 institutions in Europe, America and Asia, from both academia and industries, within the framework of the COST

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IC1004 Action on "Cooperative Radio Communications for Green and Smart Environments". The book will have appeal to graduates and researchers in the Radio Communications area, and also to engineers working in the Wireless industry. Topics discussed in this book include: • Radio waves

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propagation phenomena
in diverse urban, indoor,
vehicular and body
environments•

Measurements,
characterization, and
modelling of radio
channels beyond 4G
networks• Key issues in
Vehicle (V2X)
communication•

Wireless Body Area
Networks, including
specific Radio Channel

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Models for WBANs•
Energy efficiency and
resource management
enhancements in Radio
Access Networks•
Definitions and models
for the virtualised and
cloud RAN
architectures• Advances
on feasible indoor
localization and tracking
techniques• Recent
findings and innovations
in antenna systems for

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Physical Layer Network
Coding for next
generation wireless
systems• Methods and
techniques for MIMO
Over the Air (OTA)
testing

By 2020, if not before,
mobile computing and
wireless systems are
expected to enter the
fifth generation (5G),
which promises

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evolutionary if not revolutionary services. What those advanced services will look like, sound like, and feel like is the theme of the book *Advances in Mobile Computing and Communications: Perspectives and Emerging Trends in 5G Networks*. The book explores futuristic and compelling ideas in

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latest developments of communication and networking aspects of 5G. As such, it serves as an excellent guide for advanced developers, communication network scientists, researchers, academicians, and graduate students. The authors address computing models, communication architecture, and

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protocols based on 3G, LTE, LTE-A, 4G, and beyond. Topics include advances in 4G, radio propagation and channel modeling aspects of 4G networks, limited feedback for 4G, and game theory application for power control and subcarrier allocation in OFDMA cellular networks. Additionally, the book covers

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millimeter-wave technology for 5G networks, multicellular heterogeneous networks, and energy-efficient mobile wireless network operations for 4G and beyond using HetNets. Finally, the authors delve into opportunistic multiconnect networks with P2P WiFi and cellular providers and video streaming over

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wireless channels for 4G
and beyond.

Number Theory Meets
Wireless

Communications

Channel Modelling and
Propagation

In-Band Full-Duplex

Wireless Systems

Handbook

Cognitive Radio, Mobile

Communications and

Wireless Networks

Key Technologies for

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5G Wireless Systems
Coding Theory and
Applications
Space-Time Wireless
Systems

In honour of
Professor Erkki
Oja, one of the
pioneers of
Independent
Component
Analysis (ICA), this
book reviews key

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advances in the theory and application of ICA, as well as its influence on signal processing, pattern recognition, machine learning, and data mining. Examples of topics which have developed from

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the advances of
ICA, which are
covered in the
book are: A
unifying
probabilistic
model for PCA and
ICA Optimization
methods for matrix
decompositions
Insights into the
FastICA algorithm
Unsupervised

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deep learning
Machine vision
and image retrieval
A review of
developments in
the theory and
applications of
independent
component
analysis, and its
influence in
important areas
such as statistical

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signal processing,
pattern recognition
and deep learning.

A diverse set of
application fields,
ranging from
machine vision to
science policy
data.

Contributions from
leading
researchers in the
field.

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Broadcast spectrum is scarce, both in terms of our ability to access existing spectrum and as a result of access rules created by governments. An emerging paradigm called cognitive radio, however, has the

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potential to allow different systems to dynamically access and opportunistically exploit the same frequency band in an efficient way, thereby allowing broadcasters to use spectrum more efficiently.

Cognitive Radio

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and Interference
Management:
Technology and
Strategy brings
together state-of-
the-art research
results on
cognitive radio
and interference
management from
both theoretical
and practical
perspectives. It

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serves as a bridge between people who are working to develop theoretical and practical research in cognitive radio and interference management, and therefore facilitate the future development of cognitive radio

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and its

applications.

Opportunities in

5G Networks: A

Research and

Development

Perspective

uniquely focuses

on the R&D

technical design of

5th-generation

(5G) networks. It is

written and edited

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by researchers and engineers who are world-renown experts in the design of 5G networks. The book consists of four sections: The first section explains what 5G is, what its re Multi-antenna techniques are

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widely considered to be the most promising avenue for significantly increasing the bandwidth efficiency of wireless data transmission systems. In so called MIMO (multiple input multiple output)

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systems, multiple antennas are deployed both at the transmitter and the receiver. In MISO (multiple input single output) systems, the receiver has only one antenna, and the multiple transmit antennas are used for

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transmit diversity.
The key aspects of
multiple antenna
transceiver
techniques for
evolving 3G
systems and
beyond are
presented. MIMO
and MISO
(transmit diversity)
techniques are
explained in a

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common setting.
In particular, the
book covers linear
processing
transmit diversity
methods with and
without side
information at the
transmitter
(feedback),
including the
current transmit
diversity concepts

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in the WCDMA standards, as well as promising MIMO concepts, crucial for future high data rate systems. As an example, MIMO and MISO aspects of 3GPP HSDPA (high speed downlink packet access) will be

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considered.

Furthermore, examples of high throughput, low complexity space-time codes will be provided, when signalling without side information (open loop concepts). The theory of linear space-time block

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codes will be developed, and optimal non-orthogonal high throughput codes will be constructed, both for MIMO and MISO systems. Performance may be further improved by feedback from

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receiver to
transmitter. The
corresponding
closed loop modes
in the current
3GPP
specifications will
be discussed,
along with their
extensions for
more than two
transmit antennas.
In addition,

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feedback

signalling for
MIMO channels
will be addressed.

Optimal
quantisation
methods of the
feedback
messages will be
discussed. Finally,
hybrid schemes
are constructed,
where the amount

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of feedback is reduced using partly open, partly closed loop signalling. *

Provides a concise and up-to-date description of perhaps the most active area of research in wireless communications *

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Unique in presenting recent developments in both WCDMA and MIMO * MIMO and MISO techniques are explained in a common setting * Special emphasis is placed on combining theoretical understanding

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with engineering applicability For Research engineers in academia and industry, and development engineers in 3G system design as well as research students.

Computational Intelligence in

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Communications
and Business
Analytics
Flying Ad Hoc
Networks
LTE-Advanced and
Next Generation
Wireless Networks
Perspectives and
Emerging Trends
in 5G Networks
5G and Beyond
Wireless Systems

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5G System Design
Proceedings of the
International
Conference on Soft
Computing

SystemsICSCS 2015,
Volume 2Springer

This proceedings book
covers the theory,
design and
applications of
computer networks,
distributed computing
and information

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systems. Today's networks are evolving rapidly, and there are several developing areas and applications. These include heterogeneous networking supported by recent technological advances in power wireless communications, along with silicon

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integration of various functionalities such as sensing, communications, intelligence and actuations, which is emerging as a critically important disruptive computer class based on a new platform, networking structure and interface that enables novel, low-cost and high-volume

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applications. However, implementing these applications has sometimes been difficult due to interconnection problems. As such, different networks need to collaborate, and wired and next-generation wireless systems need to be integrated in order to develop high-

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performance
computing solutions to
address the problems
arising from these
networks'
complexities. This
ebook presents the
latest research
findings, as well as
theoretical and
practical perspectives
on the innovative
methods and
development

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techniques related to the emerging areas of information networking and applications

This book focuses on key simulation and evaluation

technologies for 5G systems. Based on the most recent research results from academia and industry, it describes the evaluation

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methodologies in depth for network and physical layer technologies. The evaluation methods are discussed in depth. It also covers the analysis of the 5G candidate technologies and the testing challenges, the evolution of the testing technologies, fading channel measurement

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and modeling,
software simulations,
software hardware
cosimulation, field
testing and other novel
evaluation methods.
The fifth-generation
(5G) mobile
communications
system targets highly
improved network
performances in terms
of the network
capacity and the

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number of connections. Testing and evaluation technologies is widely recognized and plays important roles in the wireless technology developments, along with the research on basic theory and key technologies. The investigation and developments on the multi-level and

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comprehensive
evaluations for 5G
new technologies,
provides important
performance
references for the 5G
technology filtering
and future
standardizations.
Students focused on
telecommunications,
electronic engineering,
computer science or
other related

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disciplines will find this book useful as a secondary text.

Researchers and professionals working within these related fields will also find this book useful as a reference.

Femtocell is currently the most promising technology for supporting the increasing demand of

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data traffic in wireless networks. Femtocells provide an opportunity for enabling innovative mobile applications and services in home and office environments.

Femtocell
Communications and
Technologies:
Business
Opportunities and
Deployment

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Challenges is an extensive and thoroughly revised version of a collection of review and research based chapters on femtocell technology. This work focuses on mobility and security in femtocell, cognitive femtocell, and standardization and deployment scenarios. Several crucial topics

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addressed in this book are interference mitigation techniques, network integration option, cognitive optimization, and economic incentives to install femtocells that may have a larger impact on their ultimate success. The book is optimized for use by graduate researchers who are

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familiar with the
fundamentals of
wireless
communication and
cellular concepts.
Cognitive Radio-
Oriented Wireless
Networks
PHY Layer
Perspective
Advances in Mobile
Computing and
Communications
Information and

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Communication
Technology for
Development for
Africa

Advances in
Independent
Component Analysis
and Learning
Machines

MIMO Communication
for Cellular Networks
4th International
Castle Meeting,
Palmela Castle,

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Portugal, September
15-18, 2014

Discover the
fundamental
characteristics of ultra-
dense networks with
this comprehensive
text. Featuring a
consistent
mathematical
description of ultra-
dense small cell
networks while also
covering real-world

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issues such as network deployment, operation and optimization, this book investigates performance metrics of coverage probability and area spectral efficiency (ASE) and addresses the aspects of ultra-dense networks that make them different from current

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networks. Insightful intuitions, which will assist decision-makers as they migrate their services, are explained and mathematically proven. The book presents the latest review of research outcomes on ultra-dense networks, based on both theoretical analyses

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and network simulations, includes over 200 sources from 3GPP, the Small Cell Forum, journals and conference proceedings, and covers all other related and prominent topics. This is an ideal reference text for professionals who are dealing with the development,

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deployment, operation and maintenance of ultra-dense small cell networks, as well as researchers and graduate students in communications.

Discover the societal and technology drivers contributing to build the next generation of wireless telecommunication networks Shaping

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Future 6G Networks: Needs, Impacts, and Technologies is a holistic snapshot on the evolution of 5G technologies towards 6G. With contributions from international key players in industry and academia, the book presents the hype versus the realistic capabilities of 6G technologies, and

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delivers cutting-edge
business and
technological insights
into the future
wireless
telecommunications
landscape. You 'll
learn about:
Forthcoming demand
for post 5G networks,
including new
requirements coming
from small and large
businesses,

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manufacturing,
logistics, and
automotive industry
Societal implications
of 6G, including digital
sustainability,
strategies for
increasing energy
efficiency, as well
future open
networking
ecosystems Impacts
of integrating non-
terrestrial networks to

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build the 6G
architecture

Opportunities for
emerging THz radio
access technologies
in future integrated
communications,
positioning, and
sensing capabilities in
6G Design of highly
modular and
distributed 6G core
networks driven by
the ongoing RAN-

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Core integration and the benefits of AI/ML-based control and management

Disruptive

architectural

considerations

influenced by the Post-

Shannon Theory The

insights in Shaping

Future 6G Networks

will greatly benefit IT

engineers and

managers focused on

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the future of networking, as well as undergraduate and graduate engineering students focusing on the design, implementation, and management of mobile networks and applications.

This exciting new book examines the feasibility of using a method of doubling

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the capacity of cellular networks by simultaneously transmitting and receiving signals at the same frequency, a process known as full duplexing (FD). To realize full duplexing, changes in the hardware of the cell-base stations, relaying equipment, “hot spot” access

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points and mobile phones are necessary to prevent the hardware 's transmitters from interfering with their own receivers. This requires looking at how to separate the strong transmitted signal from the very weak received signal, a process requiring both hardware

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(analog) changes and more complex digital signal processing.

Different ways of achieving that goal are examined. The books reviews the merits of hardware changes involving new duplexing components that may be different depending on the frequency band and

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cell hardware being used. Developing full duplex (FD) systems in 5G LTE cellular communications and what can be achieved with ferrite-based circulators in terms of size reduction and performance enhancement, especially at millimetric frequencies, is

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considered. The relative merits of ferrite and non-ferrite circulators are compared in terms of their fundamental materials and device technologies, such as isolation, insertion loss, bandwidth and non-linearity. FD in the entire 5G cell is also examined and its resulting range of

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equipment and device communication. This includes front-hauling, more sophisticated back and front-hauling, backhaul beam switching, and cell extenders and relays, all of which could involve FD. Get up to speed with the protocols, network architectures and techniques for 5G

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wireless networks

with this

comprehensive guide.

Advanced Information

Networking and

Applications

Opportunities in 5G

Networks

Software Defined

Mobile Networks

(SDMN)

Needs, Impacts and

Technologies

Signal Processing

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Techniques for Power
Efficient Wireless
Communication
Systems

Implementing Full
Duplexing for 5G
Solutions for the
Internet of Things

*This book
constitutes
refereed
proceedings of the
12th International
Conference on*

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*International
Conference on
Computational
Collective
Intelligence, ICCCI
2020, held in Da
Nang, Vietnam, in
November -
December 2020.
Due to the the
COVID-19
pandemic the
conference was
held online. The 68*

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*papers were
thoroughly
reviewed and
selected from 314
submissions. The
papers are
organized
according to the
following topical
sections: data
mining and
machine learning;
deep learning and
applications for*

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*industry 4.0;
recommender
systems; computer
vision techniques;
decision support
and control
systems; intelligent
management
information
systems;
innovations in
intelligent systems;
intelligent
modeling and*

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simulation

*approaches for
games and real
world systems;
experience
enhanced
intelligence to IoT;
data driven IoT for
smart society;
applications of
collective
intelligence;
natural language
processing; low*

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resource

*languages
processing;
computational
collective
intelligence and
natural language
processing.*

*This book presents
the fundamental
concepts, recent
advancements, and
opportunities for
future research in*

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various key enabling technologies in next-generation wireless communications. The book serves as a comprehensive source of information in all areas of wireless communications with a particular emphasis on

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physical (PHY) layer techniques related to 5G wireless systems and beyond. In particular, this book focuses on different emerging techniques that can be adopted in 5G wireless networks. Some of those techniques include massive-

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MIMO, mm-Wave communications, spectrum sharing, device-to-device (D2D) and vehicular to anything (V2X) communications, radio-frequency (RF) based energy harvesting, and NOMA.

Subsequent chapters cover the

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*fundamentals and
PHY layer design
aspects of different
techniques that
can be useful for
the readers to get
familiar with the
emerging
technologies and
their applications.
The aim of this
book is to present
the modern design
and analysis*

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principles of millimeter-wave communication system for wireless devices and to give postgraduates and system professionals the design insights and challenges when integrating millimeter wave personal communication

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*system. Millimeter
wave*

*communication
system are going
to play key roles in
modern gigabit
wireless*

*communication
area as millimeter-
wave industrial
standards from
IEEE, European*

*Computer
Manufacturing*

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Association

*(ECMA) and
Wireless High
Definition*

(Wireless HD)

*Group, are on their
way to the market.*

*The book will
review up-to-date
research results
and utilize*

*numerous design
and analysis for
the whole system*

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*covering from
Millimeter wave
frontend to digital
signal processing
in order to address
major topics in a
high speed
wireless system.
This book
emphasizes the
importance and
the requirements
of high-gain
antennas, low*

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*power transceiver,
adaptive equalizer/
modulation,
channeling coding
and adaptive multi-
user detection for
gigabit wireless
communications.
In addition, the
book will include
the updated
research literature
and patents in the
topics of*

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*transceivers,
antennas, MIMO,
channel capacity,
coding, equalizer,
Modem and multi-
user detection.*

*Finally the
application of
these antennas will
be discussed in
light of different
forthcoming
wireless standards
at V-band and E-*

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band.

*Pervasive Mobile
and Ambient
Wireless
Communications
reports the
findings of COST
2100, a project of
the European
intergovernmental
COST framework
addressing various
topics currently
emerging in mobile*

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and wireless communications. Drawing on experience developed in this and earlier COST projects, the text represents the final outcome of collaborative work involving more than 500 researchers in 140 institutions and 30

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countries

(including outside Europe). The book's subject matter includes: transmission techniques; signal processing; radio channel modelling and measurement; radio network issues; and recent paradigms including ultra-

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*wideband,
cooperative,
vehicle-to-vehicle
and body
communications.
The research
reported comes
from a variety of
backgrounds:
academic, equipme
nt-manufacturing
and operational
and the
information*

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contained in this book will bring the study reported to a wider audience from all those spheres of work. Pervasive Mobile and Ambient Wireless Communications will be of interest to researchers for its cutting-edge analysis and to

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*practitioners for its
functional
usability.*

*Shaping Future 6G
Networks*

*Wireless
Communications
Security*

*Simulation and
Evaluation*

*Techniques
5G Mobile and
Wireless*

Communications

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Technology

COST Action 2100

FCC Record

*Pervasive Mobile
and Ambient*

Wireless

Communications

This volume
explores the
rich interplay
between number
theory and
wireless
communications,

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reviewing the
surprisingly
deep connections
between these
fields and
presenting new
research
directions to
inspire future
research. The
contributions of
this volume stem
from the
Workshop on

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Interactions
between Number
Theory and
Wireless
Communication
held at the
University of
York in 2016.
The chapters,
written by
leading experts
in their
respective
fields, provide

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direct overviews
of highly
exciting current
research
developments.

The topics
discussed
include metric
Diophantine
approximation,
geometry of
numbers,
homogeneous
dynamics,

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algebraic
lattices and
codes, network
and channel
coding, and
interference
alignment. The
book is edited
by experts
working in
number theory
and
communication
theory. It thus

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provides unique insight into key concepts, cutting-edge results, and modern techniques that play an essential role in contemporary research. Great effort has been made to present the material in

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a manner that is accessible to new researchers, including PhD students. The book will also be essential reading for established researchers working in number theory or wireless communications

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looking to
broaden their
outlook and
contribute to
this emerging in
terdisciplinary
area.

As the
theoretical
foundations of
multiple-antenna
techniques
evolve and as
these multiple-

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input multiple-
output (MIMO)
techniques
become essential
for providing
high data rates
in wireless
systems, there
is a growing
need to
understand the
performance
limits of MIMO
in practical

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networks. To address this need, MIMO Communication for Cellular Networks presents a systematic description of MIMO technology classes and a framework for MIMO system design that

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takes into account the essential physical-layer features of practical cellular networks. In contrast to works that focus on the theoretical performance of abstract MIMO

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channels, MIMO
Communication
for Cellular
Networks
emphasizes the
practical
performance of
realistic MIMO
systems. A
unified set of
system
simulation
results
highlights

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relative
performance
gains of
different MIMO
techniques and
provides
insights into
how best to use
multiple
antennas in
cellular
networks under
various
conditions. MIMO

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Communication

for Cellular

Networks

describes single-

user, multiuser,

network MIMO

technologies and

system-level

aspects of

cellular

networks,

including

channel

modeling,

Read Online Overview Of Mimo Systems Aalto resource

scheduling,
interference
mitigation, and
simulation
methodologies.

The key concepts
are presented
with sufficient
generality to be
applied to a
wide range of
wireless
systems,

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including those based on cellular standards such as LTE, LTE-Advanced, WiMAX, and WiMAX2. The book is intended for use by graduate students, researchers, and practicing engineers

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interested in
the physical-
layer design of
state-of-the-art
wireless
systems.

This book
describes the
current and most
probable future
wireless
security
solutions. The
focus is on the

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technical
discussion of
existing systems
and new trends
like Internet of
Things (IoT). It
also discusses
existing and
potential
security
threats,
presents methods
for protecting
systems,

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operators and end-users, describes security systems attack types and the new dangers in the ever-evolving Internet. The book functions as a practical guide describing the evolvement of the wireless

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environment, and how to ensure the fluent continuum of the new functionalities, whilst minimizing the potential risks in network security. Relying on unmanned autonomous

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flight control programs, unmanned aerial vehicles (UAVs) equipped with radio communication devices have been actively developed around the world. Given their low cost, flexible maneuvering and

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unmanned
operation, UAVs
have been widely
used in both
civilian
operations and
military
missions,
including
environmental
monitoring,
emergency
communications,
express

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distribution, even military surveillance and attacks, for example. Given that a range of standards and protocols used in terrestrial wireless networks are not applicable to UAV networks, and that some

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practical constraints such as battery power and no-fly zone hinder the maneuverability capability of a single UAV, we need to explore advanced communication and networking theories and methods for the

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sake of supporting future ultra-reliable and low-latency applications. Typically, the full potential of UAV network's functionalities can be tapped with the aid of the cooperation of multiple

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drones relying
on their ad hoc
networking, in-
network
communications
and coordinated
control.

Furthermore,
some swarm
intelligence
models and
algorithms
conceived for
dynamic

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negotiation,
path
programming,
formation flight
and task
assignment of
multiple
cooperative
drones are also
beneficial in
terms of
extending UAV's
functionalities
and coverage, as

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well as of increasing their efficiency. We call the networking and cooperation of multiple drones as the terminology 'flying ad hoc network (FANET)', and there indeed are numerous new

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challenges to be overcome before the idespread of so-called heterogeneous FANETs. In this book, we examine a range of technical issues in FANETs, from physical-layer channel modeling to MAC-layer resource

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allocation,
while also
introducing
readers to UAV
aided mobile
edge computing
techniques.

14th EAI
International
Conference,
CrownCom 2019,
Poznan, Poland,
June 11-12,
2019,

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Proceedings

Beyond LTE

Network

Architecture

12th

International

Conference,

ICCCI 2020, Da

Nang, Vietnam,

November 30 -

December 3,

2020,

Proceedings

Technology and

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Strategy

Independent

Component

Analysis

5G Wireless

Systems

Fundamentals of

Ultra-Dense

Wireless

Networks

A comprehensive
overview of the 5G
landscape covering

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technology options,
most likely use
cases and potential
system
architectures.

The book is a
collection of high-
quality peer-
reviewed research
papers presented in
International
Conference on Soft
Computing Systems

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(ICSCS 2015) held
at Noorul Islam
Centre for Higher
Education,
Chennai, India.

These research
papers provide the
latest
developments in
the emerging areas
of Soft Computing
in Engineering and
Technology. The

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book is organized in two volumes and discusses a wide variety of industrial, engineering and scientific applications of the emerging techniques. It presents invited papers from the inventors/originators

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of new applications
and advanced
technologies.

This book provides
an overview of the
latest research and
development of
new technologies
for cognitive radio,
mobile
communications,
and wireless
networks. The

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contributors discuss the research and requirement analysis and initial standardization work towards 5G cellular systems and the capacity problems it presents. They show how cognitive radio, with the

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capability to flexibly adapt its parameters, has been proposed as the enabling technology for unlicensed secondary users to dynamically access the licensed spectrum owned by legacy primary users on a

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negotiated or an opportunistic basis. They go on to show how cognitive radio is now perceived in a much broader paradigm that will contribute to solve the resource allocation problem that 5G requirements raise. The chapters

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represent hand-
selected expanded
papers from EAI
sponsored and
hosted conferences
such as the 12th
EAI International
Conference on
Mobile and
Ubiquitous
Systems, the 11th
EAI International
Conference on

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Heterogeneous
Networking for
Quality, Reliability,
Security and
Robustness, the
10th International
Conference on
Cognitive Radio
Oriented Wireless
Networks, the 8th
International
Conference on
Mobile Multimedia

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Communications,
and the EAI
International
Conference on
Software Defined
Wireless Networks
and Cognitive
Technologies for
IoT.

This book describes
the concept of a
Software Defined
Mobile Network

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(SDMN), which will impact the network architecture of current LTE (3GPP) networks. SDN will also open up new opportunities for traffic, resource and mobility management, as well as impose new challenges on network security.

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Therefore, the book addresses the main affected areas such as traffic, resource and mobility management, virtualized traffics transportation, network management, network security and techno economic concepts.

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Moreover, a complete introduction to SDN and SDMN concepts.

Furthermore, the reader will be introduced to cutting-edge knowledge in areas such as network virtualization, as well as SDN

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concepts relevant to next generation mobile networks. Finally, by the end of the book the reader will be familiar with the feasibility and opportunities of SDMN concepts, and will be able to evaluate the limits of performance and

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scalability of these new technologies while applying them to mobile broadband and networks.

Engineering
Guidelines for
Fixed, Mobile and
Satellite Systems
From Array
Processing to
MIMO

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Communications
Femtocell
Communications
and Technologies:
Business
Opportunities and
Deployment
Challenges
Advances in
Computational
Collective
Intelligence
Handbook of

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Research on
Software-Defined
and Cognitive
Radio Technologies
for Dynamic
Spectrum
Management
Business Process
Management
Workshops
4th International
Conference, CICBA
2022, Silchar,

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India, January 7-8,
2022, Revised

Selected Papers

*Many wireless
systems could
benefit from the
ability to transmit
and receive on the
same frequency at
the same time,
which is known as
In-Band Full-*

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Duplex (IBFD).

This technology could lead to enhanced spectral efficiency for future wireless networks, such as fifth-generation New Radio (5G NR) and beyond, and could enable capabilities and

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applications that were previously considered impossible, such as IBFD with phased array systems. In this exciting new book, experts from industry, academic, and federal research

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*institutions
discuss the
various
approaches that
can be taken to
suppress the
inherent self-
interference that
is generated in
IBFD systems.
Both static and
adaptive*

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techniques that span across the propagation, analog and digital domains are presented. Details and measured results that encompass high-isolation antenna designs, RF, and photonic

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cancellation as well as signal processing approaches, which include beamforming and linear/non-linear equalization are detailed.

Throughout this book, state-of-the-art IBFD systems

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that utilize these technologies will be provided as practical examples for various applications.

Expert IBFD perspectives from multiple research organizations and companies, which

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would provide readers with the most accurate state-of-the-art approaches. This is the first book that dives into both the techniques that make IBFD systems possible as well as several

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*different
applications that
use IBFD
technology.*

**THE TELECOMMUN
ICATIONS**

**HANDBOOK THE T
ELECOMMUNICATI**

**ONS HANDBOOK
ENGINEERING**

**GUIDELINES FOR
FIXED, MOBILE**

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**AND SATELLITE
SYSTEMS** *Taking a
practical
approach, The Tel
ecommunications
Handbook
examines the
principles and
details of all the
major and modern
telecommunicatio
ns systems*

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*currently available
to industry and to
end-users. It gives
essential
information about
usage,
architectures,
functioning,
planning,
construction,
measurements
and optimization.*

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The structure of the book is modular, giving both overall descriptions of the architectures and functionality of typical use cases, as well as deeper and practical guidelines for telecom

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professionals. The focus of the book is on current and future networks, and the most up-to-date functionalities of each network are described in sufficient detail for deployment purposes. The

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*contents include
an introduction to
each technology,
its evolution path,
feasibility and
utilization,
solution and
network
architecture, and
technical
functioning of the
systems*

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(signaling, coding, different modes for channel delivery and security of core and radio system). The planning of the core and radio networks (system-specific field test measurement guidelines, hands-

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*on network
planning advices
and suggestions
for parameter
adjustments) and
future systems are
also described.
With contributions
from specialists in
both industry and
academia, the
book bridges the*

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*gap between
communications
in the academic
context and the
practical
knowledge and
skills needed to
work in the teleco
mmunications
industry.
This book
presents a*

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*synthesis of the
research carried
out in the
Laboratory of
Signal Processing
and
Communications
(LaPSyC),
CONICET,
Universidad
Nacional del Sur,
Argentina, since*

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2003. It presents models and techniques widely used by the signal processing community, focusing on low-complexity methodologies that are scalable to different applications. It

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also highlights measures of the performance and impact of each compensation technique. The book is divided into three parts: 1) basic models 2) compensation techniques and 3) applications in

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advanced technologies. The first part addresses basic architectures of transceivers, their component blocks and modulation techniques. It also describes the performance to be taken into

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*account,
regardless of the
distortions that
need to be
compensated. In
the second part,
several schemes
of compensation
and/or reduction
of imperfections
are explored,
including*

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*linearization of
power amplifiers,
compensation of
the characteristics
of analog-to-
digital converters
and CFO
compensation for
OFDM modulation.
The third and last
part demonstrates
the use of some of*

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*these techniques
in modern wireless
communication
systems, such as
full-duplex
transmission,
massive MIMO
schemes and
Internet of Things
applications.
Proceedings of the
34th International*

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*Conference on
Advanced
Information
Networking and
Applications
(AINA-2020)
BPM 2019
International
Workshops,
Vienna, Austria,
September 1-6,
2019, Revised*

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*Selected Papers
Multi-antenna
Transceiver
Techniques for 3G
and Beyond*