Contents

Volume 1

Section 1. Fundamental Concepts and Theories

This section serves as a foundation for this exhaustive reference tool by addressing crucial theories essential to the understanding of Wireless Technologies. Chapters found within these pages provide an excellent framework in which to position wireless technologies within the field of information science and technology. Insight regarding the critical incorporation of global measures into wireless technologies is addressed, while crucial stumbling blocks of this field are explored. With over ten chapters comprising this foundational section, the reader can learn and choose from a compendium of expert research on the elemental theories underscoring the Wireless Technologies discipline.

Chapter 1.1. 4G Wireless Networks: Architectures, QoS Support and Dynamic Resource Management ................................................................................................................................. 1
  Dimitrios G. Stratogiannis, National Technical University of Athens, Greece
  Georgios I. Tsiropoulos, National Technical University of Athens, Greece
  John D. Kanellopoulos, National Technical University of Athens, Greece
  Panayotis G. Cottis, National Technical University of Athens, Greece

Chapter 1.2. Wireless Sensor Networks and Systems................................................................. 33
  Jaime Lloret, Polytechnic University of Valencia, Spain
  Miguel Garcia, Polytechnic University of Valencia, Spain
  Hugo Coll, Polytechnic University of Valencia, Spain
  Miguel Edo, Polytechnic University of Valencia, Spain
Chapter 1.3. A Survey on Localization in Wireless Sensor Networks .......................................................... 46
  Ricardo Marcelín-Jiménez, UAM-Iztapalapa, Mexico
  Miguel Ángel Ruiz-Sánchez, UAM-Iztapalapa, Mexico
  Mauricio López-Villaseñor, UAM-Iztapalapa, Mexico
  Víctor M. Ramos-Ramos, UAM-Iztapalapa, Mexico
  Carlos E. Moreno-Escobar, UAM-Iztapalapa, Mexico
  Manuel E. Ruiz-Sandoval, UAM-Azcapotzalco, Mexico

Chapter 1.4. Survey of Cross-Layer Optimization Techniques for Wireless Networks ......................... 60
  Han-Chieh Chao, National Ilan University, Taiwan
  Chi-Yuan Chang, National Dong Hwa University, Taiwan
  Chi-Yuan Chen, National Dong Hwa University, Taiwan
  Kai-Di Chang, National Dong Hwa University, Taiwan

Chapter 1.5. Video Delivery in Wireless Sensor Networks ................................................................. 77
  S. Guo, Boston University, USA
  T.D.C. Little, Boston University, USA

Chapter 1.6. QoS in Wireless Sensor Networks .................................................................................. 99
  Ghalib A. Shah, National University of Sciences and Technology (NUST), Pakistan
  Shaleeza Sohail, National University of Sciences and Technology (NUST), Pakistan
  Faisal B. Hussain, National University of Sciences and Technology (NUST), Pakistan

Chapter 1.7. Real-Time Communications in Wireless Sensor Networks ............................................ 120
  Isabelle Augé-Blum, Université de Lyon, France
  Fei Yang, Université de Lyon, France
  Thomas Watteyne, Université de Lyon, France

Chapter 1.8. Using Mobile Technologies as Research Tools: Pragmatics, Possibilities and Problems ................................................................. 130
  Ria Hanewald, The University of Melbourne, Australia

Chapter 1.9. Network Mobility ........................................................................................................... 151
  Arijit Ukil, Tata Consultancy Services, India

Chapter 1.10. Reviewing Mobile Marketing Research to Date: Towards Ubiquitous Marketing .... 181
  Dimitris Drossos, University of the Aegean, Greece & Athens University of Economics and Business, Greece
  George M. Giaglis, University of the Aegean, Greece & Athens University of Economics and Business, Greece

Chapter 1.11. Security Assessment of Networks ................................................................................... 208
  Aftab Ahmad, Norfolk State University, USA
Section 2. Development and Design Methodologies

This section provides in-depth coverage of conceptual architecture frameworks to provide the reader with a comprehensive understanding of the emerging developments within the field of wireless technologies. Research fundamentals imperative to the understanding of developmental processes within organizational learning are offered. From broad examinations to specific discussions on methodology, the research found within this section spans the discipline while offering detailed, specific discussions. From basic designs to abstract development, these chapters serve to expand the reaches of development and design technologies within the wireless technologies community. This section includes 20 contributions from researchers throughout the world on the topic of wireless technologies.

Chapter 2.1. Event Detection in Wireless Sensor Networks ................................................................. 226
    Sohail Anwar, Penn State University, USA
    Chongming Zhang, Shanghai Normal University, China

Chapter 2.2. Privacy Preserving Data Gathering in Wireless Sensor Network ................................. 239
    Md. Golam Kaosar, Victoria University, Australia
    Xun Yi, Victoria University, Australia

Chapter 2.3. Optimizing Resource Consumption for Secure Messaging in Resource Constrained Networks ................................................................. 254
    P. P. Abdul Haleem, National Institute of Technology, India
    M. P. Sebastian, Indian Institute of Management, India

Chapter 2.4. Perceptual Quality Assessment of Packet-Based Vocal Conversations over Wireless Networks: Methodologies and Applications ................................................................. 273
    Sofiene Jelassi, University of Sousse, Tunisia & University of Pierre et Marie Curie, France
    Habib Youssef, University of Sousse, Tunisia
    Guy Pujolle, University of Pierre et Marie Curie, France

Chapter 2.5. Enhanced QoS through Cooperating Schemes in Next Generation Wireless Networks ................................................................................................................................. 311
    Dimitris E. Charilas, National Technical University of Athens, Greece
    Athanasios D. Panagopoulos, National Technical University of Athens, Greece
    Philip Constantinou, National Technical University of Athens, Greece

    Noria Foukia, University of Otago, New Zealand
    Nathan Lewis, University of Otago, New Zealand

Chapter 2.7. A Platform for Pervasive Building Monitoring Services Using Wireless Sensor Networks ................................................................................................................................. 361
    Abolghasem (Hamid) Asgari, Thales Research & Technology Ltd., UK
Chapter 2.8. Energy-Efficient Scalable Self-Organizing Routing for Wireless Mobile Networks
Melody Moh, San Jose State University, USA
Xuquan Lin, Echelon Corporation, USA
Subhankar Dhar, San Jose State University, USA

Hadi Alasti, University of North Carolina at Charlotte, USA

Chapter 2.10. Scalable Video Delivery over Wireless LANs
Maodong Li, Nanyang Technological University, Singapore
Seong-Ping Chuah, Nanyang Technological University, Singapore
Zhenghong Chen, Nanyang Technological University, Singapore
Yap-Peng Tan, Nanyang Technological University, Singapore

Chapter 2.11. The Development of a Parallel Ray Launching Algorithm for Wireless Network Planning
Zhihua Lai, University of Bedfordshire, UK
Nik Bessis, University of Bedfordshire, UK
Guillaume De La Roche, University of Bedfordshire, UK
Pierre Kuonen, University of Applied Science of Western Switzerland, Switzerland
Jie Zhang, University of Bedfordshire, UK
Gordon J. Clapworthy, University of Bedfordshire, UK

Section 3. Tools and Technologies

This section presents extensive coverage of various tools and technologies available in the field of wireless technologies that practitioners and academicians alike can utilize to develop different techniques. These chapters enlighten readers about fundamental research on the many methods used to facilitate and enhance the integration of this worldwide phenomenon by exploring the usage of network security, multimedia streaming, and delay-based admission control, to name a few. It is through these rigorously researched chapters that the reader is provided with countless examples of the up-and-coming tools and technologies emerging from the field of wireless technologies. With 20 chapters, this section offers a broad treatment of some of the many tools and technologies within the wireless technology industry and community.

Chapter 3.1. A Technological Perspective of Mobile and Electronic Commerce Systems
Wen-Chen Hu, University of North Dakota, USA
Yanjun Zuo, University of North Dakota, USA
Naima Kaabouch, University of North Dakota, USA
Lei Chen, Sam Houston State University, USA
<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.2</td>
<td>Visualizations of Wireless Sensor Network Data</td>
<td>505</td>
</tr>
<tr>
<td></td>
<td>Brian J. d’Auriol, Kyung Hee University, Korea</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sungyoung Lee, Kyung Hee University, Korea</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Young-Koo Lee, Kyung Hee University, Korea</td>
<td></td>
</tr>
<tr>
<td>3.3</td>
<td>Network Security through Wireless Location Systems</td>
<td>524</td>
</tr>
<tr>
<td></td>
<td>André Peres, Federal Institute of Science and Technology – Rio Grande do Sul, IFRGS, Brazil</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Raul Fernando Weber, Instituto de Informática, UFRGS, Brazil</td>
<td></td>
</tr>
<tr>
<td>3.4</td>
<td>Mobile Multimedia Streaming Using Secure Multipath in Wireless Ad Hoc Networks</td>
<td>544</td>
</tr>
<tr>
<td></td>
<td>Lei Chen, Sam Houston State University, USA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chung-wei Lee, University of Illinois at Springfield, USA</td>
<td></td>
</tr>
<tr>
<td>3.5</td>
<td>Detecting Cheating Aggregators and Report Dropping Attacks in Wireless Sensor Networks</td>
<td>565</td>
</tr>
<tr>
<td></td>
<td>Mohit Virendra, State University of New York at Buffalo, USA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Qi Duan, State University of New York at Buffalo, USA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Shambhu Upadhyaya, State University of New York at Buffalo, USA</td>
<td></td>
</tr>
<tr>
<td>3.6</td>
<td>Technical Evaluation of Wireless Communications in a Mobile Learning Architecture</td>
<td>587</td>
</tr>
<tr>
<td></td>
<td>Javier Carmona-Murillo, University of Extremadura, Spain</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Jaime Galán-Jiménez, University of Extremadura, Spain</td>
<td></td>
</tr>
<tr>
<td></td>
<td>José-Luis González-Sánchez, University of Extremadura, Spain</td>
<td></td>
</tr>
<tr>
<td>3.7</td>
<td>Cooperative Broadcast in Large-Scale Wireless Networks</td>
<td>604</td>
</tr>
<tr>
<td></td>
<td>Birsen Sirkeci-Mergen, San Jose State University, USA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Anna Scaglione, University of California at Davis, USA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Michael Gastpar, University of California at Berkeley, USA</td>
<td></td>
</tr>
<tr>
<td>3.8</td>
<td>Increasing Spatial Awareness by Integrating Internet Geographic Information Services (GIServices) with Real Time Wireless Mobile GIS Applications</td>
<td>624</td>
</tr>
<tr>
<td></td>
<td>Ming-Hsiang Tsou, San Diego State University, USA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ick Hoi Kim, San Diego State University, USA</td>
<td></td>
</tr>
<tr>
<td>3.9</td>
<td>Delay-Based Admission Control to Sustain QoS in a Managed IEEE 802.11 Wireless LAN</td>
<td>638</td>
</tr>
<tr>
<td></td>
<td>A. Ksentini, University of Rennes 1, France</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A. Nafaa, University College Dublin, Ireland</td>
<td></td>
</tr>
<tr>
<td>3.10</td>
<td>A Novel Energy Saving Approach through Mobile Collaborative Computing Systems</td>
<td>661</td>
</tr>
<tr>
<td></td>
<td>Xiaoxin Wu, Intel, China</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Huan Chen, Chinese Academy of Sciences, China</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yaoda Liu, Intel, China</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wenwu Zhu, Microsoft Research, China</td>
<td></td>
</tr>
</tbody>
</table>
Chapter 3.11. A Novel Application of Information Communication Technology to Assist Visually Impaired People

Tee Zhi Heng, The University of Nottingham Malaysia Campus, Malaysia
Ang Li Minn, The University of Nottingham Malaysia Campus, Malaysia
Seng Kah Phooi, The University of Nottingham Malaysia Campus, Malaysia


Petros Belsis, Technological Education Institute Athens, Greece
Christos Skourlas, Technological Education Institute Athens, Greece
Stefanos Gritzalis, University of the Aegean, Greece


Chia-Hui Wang, Ming Chuan University, Taiwan
Ray-I Chang, National Taiwan University, Taiwan
Jan-Ming Ho, Academia Sinica, Taiwan

Volume 2


Ning Yu, University of Central Florida, USA
Kien A. Hua, University of Central Florida, USA
Danzhou Liu, Symantec Corporation, USA

Chapter 3.15. Mobile Video Streaming Over Heterogeneous Networks

Ghaida A. Al-Suhail, University of Basra, Iraq
Martin Fleury, University of Essex, UK
Salah M. Saleh Al-Majeed, University of Essex, UK

Chapter 3.16. The TFRC Protocol and Its Usage for Wireless Video Transmission

Christos Bouras, Research Academic Computer Technology Institute, Greece & University of Patras, Greece
Vassilis Papapanagiotou, Research Academic Computer Technology Institute, Greece, & University of Patras, Greece
Kostas Stamos, Research Academic Computer Technology Institute, Greece & University of Patras, Greece
Giannis Zaoudis, Research Academic Computer Technology Institute, Greece & University of Patras, Greece

Chapter 3.17. Time Synchronization in Wireless Sensor Networks

Gyula Simon, University of Pannonia, Hungary
Gergely Vakulya, University of Pannonia, Hungary
Chapter 3.18. Soft-Checkpointing Based Hybrid Synchronous Checkpointing Protocol for Mobile Distributed Systems

Parveen Kumar, Meerut Institute of Engineering & Technology, India
Rachit Garg, Singhania University, India


Pruet Boonma, University of Massachusetts, USA
Junichi Suzuki, University of Massachusetts, USA

Chapter 3.20. Data Communications Inside Vehicular Environments

Cheng-Min Lin, Nan Kai University of Technology, Taiwan, R.O.C.
Tzong-Jye Liu, Feng Chia University, Taiwan, R.O.C.

Section 4. Utilization and Application

This section discusses a variety of applications and opportunities available that can be considered by practitioners in developing viable and effective wireless technologies programs and processes. This section includes over 20 chapters that review topics from case studies in Asia to best practices in Europe and ongoing research in the United States. Further chapters discuss wireless technologies in a variety of settings (government, R&D, higher education, healthcare, etc.). Contributions included in this section provide excellent coverage of today's IT community and how research into wireless technologies impact the social fabric of our present-day global village.

Chapter 4.1. A Survey on Applied Cryptography in Secure Mobile Ad Hoc Networks and Wireless Sensor Networks

Jianmin Chen, Florida Atlantic University, USA
Jie Wu, Florida Atlantic University, USA

Chapter 4.2. Wireless Handheld Device and LAN Security Issues: A Case Study

Raj Gururajan, University of Southern Queensland, Australia
Abdul Hafeez-Baig, University of Southern Queensland, Australia

Chapter 4.3. Anomaly Detection in Streaming Sensor Data

Alec Pawling, University of Notre Dame, USA
Ping Yan, University of Notre Dame, USA
Julián Candia, Northeastern University, USA
Tim Schoenharl, University of Notre Dame, USA
Greg Madey, University of Notre Dame, USA

Chapter 4.4. Data Broadcast Management in Wireless Communication: An Emerging Research Area

Seema Verma, Bansathali University, India
Rakhee Kulshrestha, Birla Institute of Technology and Science, India
Savita Kumari, University of Seventh April, Libya
Chapter 4.5. Data Gathering in Correlated Wireless Sensor Networks with Cooperative Transmission

Laxminarayana S. Pillutla, The University of British Columbia, Canada
Vikram Krishnamurthy, The University of British Columbia, Canada

Chapter 4.6. Sensor Networks Security for Pervasive Healthcare

Ioannis Krontiris, University of Mannheim, Germany

Chapter 4.7. Communication Issues in Pervasive Healthcare Systems and Applications

Demosthenes Vouyioukas, University of the Aegean, Greece
Ilias Maglogiannis, University of Central Greece, Greece

Chapter 4.8. Adoption of Wearable Systems in Modern Patient Telemonitoring Systems

Antoniadou Eleni, University of Central Greece, Greece
Ilias Maglogiannis, University of Central Greece, Greece

Chapter 4.9. Dynamic Business Processes and Virtual Communities in Wireless eHealth Environments

Dimosthenis Georgiadis, University of Cyprus, Cyprus
Panagiotis Germanakos, University of Nicosia, Cyprus
Constantinos Mourlas, National & Kapodistrian University of Athens, Greece
George Samaras, University of Cyprus, Cyprus
Eleni Christodoulou, University of Cyprus, Cyprus

Chapter 4.10. An Advanced and Secure Symbian-Based Mobile Approach for Body Sensor Networks Interaction

Orlando R. E. Pereira, University of Beira Interior, Covilhã, Portugal
João M. L. P. Caldeira, University of Beira Interior, Covilhã, Portugal, Instituto de Telecomunicações, Covilhã, Portugal, and Polytechnic Institute of Castelo Branco, Portugal
Joel J. P. C. Rodrigues, University of Beira Interior, Covilhã, Portugal and Instituto de Telecomunicações, Covilhã, Portugal

Chapter 4.11. Wireless Solutions for Elderly People Assistance

Alessia D’Andrea, IRPPS-CNR, Italy
Arianna D’Ulizia, IRPPS-CNR, Italy
Fernando Ferri, IRPPS-CNR, Italy
Patrizia Grifoni, IRPPS-CNR, Italy

Chapter 4.12. The Role of Wireless Technology in Addressing Sleeping Disorders in Aged Care

Clint Moloney, University of Southern Queensland, Australia
Section 5. Organizational and Social Implications

This section includes a wide range of research pertaining to the social and behavioral impact of wireless technologies around the world. Chapters introducing this section critically analyze and discuss trends in the urban communication infrastructure and educational technology in the medical industry. Additional chapters included in this section look at biomedical and hospital applications, as well as using wireless technologies for social and environmental change. Also investigating a concern within the field of wireless technologies is research which discusses student perceptions of how mobile and wireless technologies should be integrated into their curricula. With more than 20 chapters, the discussions presented in this section offer research into the integration of global wireless technologies, as well as implementation of ethical considerations for all organizations.

Chapter 5.1. A Practice Perspective on Transforming Mobile Work ......................................................... 1104
   Riikka Vuokko, Åbo Akademi University, Finland

Chapter 5.2. The Role of Information Communication Technologies Within the Field of Communication for Social Change ........................................................................................................ 1117
   Jan Servaes, University of Massachusetts, Amherst, USA.

Chapter 5.3. Urban Telecommunications Network: Technology Convergence and Urban Infrastructure ........................................................................................................ 1136
   Tan Yigitcanlar, Queensland University of Technology, Australia
   Hoon Jung Han, Griffith University, Australia

Chapter 5.4. The Urban Communication Infrastructure: Global Connection and Local Detachment ........................................................................................................ 1150
   Susan Drucker, Hofstra University, USA
   Gary Gumpert, Communication Landscapers, USA

Chapter 5.5. Evaluation of Arab Municipal Websites ................................................................................. 1170
   Hana Abdullah Al-Nuaim, King Abdulaziz University, Saudi Arabia

   Blessing Mukabeta Maumbe, West Virginia University, USA

Chapter 5.7. An Investigation Into the Use of Pervasive Wireless Technologies to Support Diabetes Self-Care ........................................................................................................ 1211
   Nilmini Wickramasinghe, RMIT University, Australia
   Indrit Troshani, University of Adelaide Business School, Australia
   Steve Goldberg, INET International Inc., Canada
Chapter 5.8. Healthcare Oriented Smart House for Elderly and/or Disabled People:
A Case Study.............................................................................................................................. 1227
Nicholas S. Samaras, TEI of Larissa, Greece
Costas Chaikalis, TEI of Larissa, Greece
Giorgios Siafakas, TEI of Larissa, Greece

Chapter 5.9. Microsystems for Wireless Sensor Networks with Biomedical Applications........... 1255
J. P. Carmo, University of Minho, Portugal
N. S. Dias, University of Minho, Portugal
J. H. Correia, University of Minho, Portugal

Chapter 5.10. The Outdoor Wireless Healthcare Monitoring System for Hospital Patients Based on ZigBee................................................................. 1293
Xiaoxin Xu, Zhejiang University, China
Mingguang Wu, Zhejiang University, China
Bin Sun, China JiLiang University, China
Jianwei Zhang, China JiLiang University, China
Cheng Ding, HangZhou Meacon Automatic Technology Co., Ltd, China

Chapter 5.11. Educational Technology in the Medical Industry................................................. 1306
Keith B. Hopper, Southern Polytechnic State University, USA
Carol L. Johns, Upson Regional Medical Center, USA

Chapter 5.12. Student Perceptions and Uses of Wireless Handheld Devices:
Implications for Implementing Blended and Mobile Learning in an Australian University...... 1323
Raj Gururajan, University of Southern Queensland, Australia
Abdul Hafeez-Baig, University of Southern Queensland, Australia
P. A. Danaher, University of Southern Queensland, Australia
Linda De George-Walker, University of Southern Queensland, Australia

Chapter 5.13. Live Interactive Virtual Explorations via the High Performance Wireless Research and Education Network......................................................... 1339
Kimberly Mann Bruch, University of California at San Diego, USA
Hans-Werner Braun, University of California at San Diego, USA
Susan Teel, Southern California Research Learning Center, USA

Chapter 5.14. Mobile Interactive Learning in Large Classes: Towards an Integrated Instructor-Centric and Peer-to-Peer Approach........................................... 1361
Kin-Choon Yow, Nanyang Technological University, Singapore
Boon-Chong Seet, Auckland University of Technology, New Zealand

Chapter 5.15. Use of Mobile Technology at Montclair State University ................................. 1374
Patricia Kahn, Montclair State University, USA
Edward Chapel, Montclair State University, USA
Section 6. Managerial Impact

This section presents contemporary coverage of the social implications of wireless technologies, more specifically related to the corporate and managerial utilization of information sharing technologies and applications, and how these technologies can be facilitated within organizations. Core ideas such as training and continuing education of human resources in modern organizations are discussed throughout these chapters. Issues, such as a supply chain management and forecasting that affect the intention to adopt technological innovations in wireless technologies are discussed. Equally as crucial, chapters within this section discuss how leaders can manage corporate responsibility within these new wireless technologies order to foster desired intangibles in their employees.
Chapter 6.1. Reality Mining, Location Based Services, and E-Business Opportunities: The Case of City Analytics
José Antonio Ariza Montes, University of Córdoba, Spain
Alfonso Carlos Morales Gutiérrez, University of Córdoba, Spain
Emilio Morales Fernández, University of Córdoba, Spain
Alfredo Romeo, City 2020 Ltd., Spain

Chapter 6.2. Location-Aware Access Control for Mobile Workflow Systems
Michael Decker, University of Karlsruhe, Germany

Chapter 6.3. Mobile Technology Adoption in the Supply Chain
Bill Doolin, Auckland University of Technology, New Zealand
Eman Ibrahim Al Haj Ali, United Arab Emirates University, UAE

Chapter 6.4. Impact of Wireless Sensor Network Technology on Service Innovation in Supply Chain Management
Gong Li, North Dakota State University, USA
Jing Shi, North Dakota State University, USA

Chapter 6.5. Collaborative e-Learning and ICT Tools to Develop SME Managers: An Italian Case
Genoveffa (Jeni) Giambona, University of Reading, UK
David W. Birchall, University of Reading, UK

Chapter 6.6. Opportunistic Networks as an Enabling Technology for Mobile Word-of-Mouth Advertising
Andreas Heinemann, Competence Center for Applied Security Technology, Germany
Tobias Straub, Baden-Württemberg Cooperative State University, Germany

Chapter 6.7. An Exploratory Study to Understand the Drivers and Inhibitors for the Successful Adoption of Wireless Technology in Australian Healthcare Systems
Abdul Hafeez-Baig, University of Southern Queensland, Australia
Raj Gururajan, University of Southern Queensland, Australia

Chapter 6.8. Handover Analysis and Dynamic Mobility Management for Wireless Cellular Networks
Ramón M. Rodríguez-Dagnino, Tecnológico de Monterrey, México.
Hideaki Takagi, University of Tsukuba, Japan

Chapter 6.9. Performance Evaluation of a Three Node Client Relay System
Sergey Andreev, Tampere University of Technology, Finland
Olga Galinina, Tampere University of Technology, Finland
Alexey Vinel, Tampere University of Technology, Finland

Chapter 6.10. Case “Mobile-INTEGRAL”
L. F. Pau, Copenhagen Business School, Denmark & Rotterdam School of Management, The Netherlands
Chapter 6.11. M-Government: Challenges and Key Success Factors –
Saudi Arabia Case Study ........................................................................................................1698
Mubarak S. Almutairi, King Fahd University of Petroleum & Minerals, Saudi Arabia

Section 7. Critical Issues

This section contains 15 chapters giving a wide variety of perspectives on wireless technology and its
implications. Such perspectives include wireless communications’ critical mass, credibility, use inten-
tion, universality, and several more. The chapter also discusses new ethical considerations within wire-
less technologies. Within the chapters, the reader is presented with an in-depth analysis of the most
current and relevant issues within this growing field of study. Crucial questions are addressed and al-
ternatives offered, such as the role of ICTs for business enterprise mobility. Rounding out this section is
a look at interoperability within AAL systems.

Chapter 7.1. The Critical Mass of Wireless Communications: Differences
between Developing and Developed Economies ................................................................. 1719
Kaisu Puumalainen, Lappeenranta University of Technology, Finland
Lauri Frank, University of Jyväskylä, Finland
Sanna Sundqvist, Lappeenranta University of Technology, Finland
Anni Tuppura, Lappeenranta University of Technology, Finland

Chapter 7.2. Wireless Networking Credibility, Device Interoperability & Other Important
Issues to Take Into Consideration for the Deployment of a Homecare Service Provision
Model........................................................................................................................................1737
Konstantinos Perakis, National Technical University of Athens, Greece
Dimitris Koutsouris, National Technical University of Athens, Greece

Chapter 7.3. Factors Affecting WiFi Use Intention: The Context of Cyprus............................. 1760
Despo Ktoridou, University of Nicosia, Cyprus
Hans-Ruediger Kaufmann, University of Nicosia, Cyprus
Christos Liassides, Columbia Management, Cyprus

Chapter 7.4. Factors Influencing Satisfaction with Mobile Portals ............................................. 1782
Daisy Seng, Monash University, Australia
Carla Wilkin, Monash University, Australia
Ly-Fie Sugianto, Monash University, Australia

Chapter 7.5. Rethinking Realistic Wireless Network Mobility: Model and Trust...................... 1799
Lu Yan, University of Hertfordshire, UK

Chapter 7.6. Security and Attacks in Wireless Sensor Networks ............................................. 1811
Murat Al, University of Arkansas at Little Rock, USA
Kenji Yoshigoe, University of Arkansas at Little Rock, USA
Section 8. Emerging Trends

This section highlights research potential within the field of wireless technologies, while exploring uncharted areas of study for the advancement of the discipline. Introducing this section are chapters that set the stage for future research directions and topical suggestions for continued debate, centering on the new venues and forums for discussion. Discussions assessing the potential of new technologies in mobile learning are presented. Another debate which currently finds itself at the forefront of research is the potential of using wireless technologies as both a desirable and undesirable process within your company. Found in these chapters, concluding this exhaustive multi-volume set are areas of emerging trends and suggestions for future research within this rapidly expanding discipline.

Chapter 8.1. Evolution in Broadband Technology and Future of Wireless Broadband............. 1928
  Banani Nandi, AT&T Shannon Laboratories, USA
  Ganesh Subramaniam, AT&T Shannon Laboratories, USA

Chapter 8.2. Broadband Optical Access using Centralized Carrier Distribution...................... 1958
  Chi-Wai Chow, National Chiao Tung University, Taiwan
Chapter 8.3. Emerging Wireless Networks for Social Applications .................................................. 1978
Raúl Aquino, University of Colima, México
Luis Villaseñor, CICESE Research Centre, México
Víctor Rangel, National Autonomous University of Mexico, México
Miguel García, University of Colima, México
Artur Edwards, University of Colima, México

Chapter 8.4. The Future of WiMAX .......................................................................................... 2001
Dennis Viehland, Massey University, New Zealand
Sheenu Chawla, SUSH Global Solutions, New Zealand

Chapter 8.5. The Next Generation CDMA Technology for Futuristic Wireless
Communications: Why Complementary Codes? ..................................................................... 2014
Hsiao-Hwa Chen, National Cheng Kung University, Taiwan

Chapter 8.6. Cross Platform M-Learning for the Classroom of Tomorrow .............................. 2042
Daniel C. Doolan, Robert Gordon University, Scotland
Tracey J. Mehigan, University College Cork, Ireland
Sabin Tabirca, University College Cork, Ireland
Ian Pitt, University College Cork, Ireland

Chapter 8.7. Imagine Mobile Learning in your Pocket .............................................................. 2060
Cecilie Murray, Delphian eLearning, Australia

Chapter 8.8. Infrastructures in Vehicular Communications: Status, Challenges
and Perspectives .......................................................................................................................... 2089
Danda B. Rawat, Old Dominion University, USA
Gongjun Yan, Old Dominion University, USA

Chapter 8.9. Advanced Scheduling Schemes in 4G Systems ......................................................... 2108
Arijit Ukil, Tata Consultancy Services Ltd., India

Chapter 8.10. Advances in Security and Privacy in Wireless Sensor Networks.......................... 2158
Dulal C. Kar, Texas A&M University-Corpus Christi, USA
Hung L. Ngo, Texas A&M University-Corpus Christi, USA
Clifton J. Mulkey, Texas A&M University-Corpus Christi, USA
Geetha Sanapala, Texas A&M University-Corpus Christi, USA

Chapter 8.11. Certificate-Based Trust Establishment in eEnabled Airplane Applications:
Challenges and Approaches ...................................................................................................... 2187
Mingyan Li, Boeing Research & Technology, USA
Krishna Sampigethaya, Boeing Research & Technology, USA
Radha Poovendran, University of Washington, USA