

WIRELESS INTERNET HANDBOOK

*Technologies, Standards,
and Applications*

Edited by
Borko Furht, Ph.D.
Mohammad Ilyas, Ph.D.



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*Technologies, Standards,
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Preface

Just a few years ago, the only way to access the Internet and the Web was by using wireline desktop and laptop computers. Today, however, users are traveling between corporate offices and customer sites, and there is a great need to access the Internet through wireless devices. The wireless revolution started with wireless phones and continued with Web phones and wireless handheld devices that can access the Internet. Many nations and corporations are making enormous efforts to establish a wireless infrastructure, including declaring new wireless spectrum, building new towers, and inventing new handheld devices, high-speed chips, and protocols.

The purpose of the *Handbook of Wireless Internet* is to provide a comprehensive reference on advanced topics in this field. The *Handbook* is intended both for researchers and practitioners in the field, and for scientists and engineers involved in the design and development of the wireless Internet and its applications. The *Handbook* can also be used as the textbook for graduate courses in the area of the wireless Internet.

This *Handbook* is comprised of 24 chapters that cover various aspects of wireless technologies, networks, architectures, and applications. Part I, *Basic Concepts*, introduces fundamental wireless concepts and techniques, including various generations of wireless systems, security aspects of wireless Internet, and current industry trends.

Part II, *Technologies and Standards*, covers multimedia and video streaming over the wireless Internet, voice service over the wireless Internet, and wireless standards such as IEEE 802.11 (for wireless LANs) and Wireless Application Protocol.

Part III, *Networks and Architectures*, consists of chapters dealing with issues such as user mobility in IP networks, location-prediction techniques, wireless local access techniques, multiantenna technology, Bluetooth-based wireless systems, *ad hoc* networks, and others.

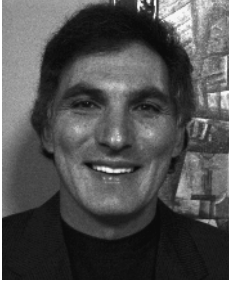
Part IV, *Applications*, includes chapters describing typical applications enabled by wireless Internet, including M-commerce, telemedicine, delivering music, and others.

We would like to thank the authors, who are experts in the field, for their contributions of individual chapters to the *Handbook*. Without their expertise and effort, this handbook would never have come to fruition. CRC Press editors and staff also deserve our sincere recognition for their support throughout the project.

Borko Furht and Mohammad Ilyas
Boca Raton, Florida

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Mohammad Ilyas received his Ph.D. degree from Queens' University in Kingston, Ontario, Canada in 1983. His doctoral research was about switching and flow control techniques in computer communications networks. Since September 1983, he has been with the College of Engineering at Florida Atlantic University, Boca Raton, Florida, where he is currently Associate Dean for Graduate Studies and Research. From 1994 to 2000, he was chair of the department. During the 1993–1994 academic year, he was on sabbatical leave with the Department of Computer Engineering, King Saud University, Riyadh, Saudi Arabia. Dr. Ilyas has conducted successful research in various areas including traffic management and congestion control in broadband/high-speed communications networks, traffic characterization, wireless communications networks, performance modeling, and simulation. He has published 1 book and over 130 research articles. He has supervised 10 Ph.D. dissertations and 32 Master's theses to completion. He has been a consultant to several national and international organizations. Dr. Ilyas is an active participant in several IEEE technical committees and activities.

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