Topics in Wireless Communications

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The future of wireless is not just wireless; it is a part of life. Wireless communications will be the next storm in the communication industry, and over $100 billion will be invested in the coming years. Wireless is also at the edge of a significant revolution — broadband multidimensional wireless will emerge in all areas of our information society.

Convergence of wireless and the Internet, and of wireless mobile and access will greatly improve the methods as well as the quality of communications. Wireless business will penetrate everywhere: mass market and specialized services, indoor and outdoor, local area and wide area, terrestrial and satellite. Wireless mobile Internet applications will surely drive this boom.

To empower our leadership in this important segment and report the newest developments in a timely fashion, we renamed the Personal Communications Series as the Wireless Communications Series to better reflect the interests of our readers. A new technical committee on broadband wireless is also on its way for the future convergence of wireless mobile and wireless access systems.

The wireless infrastructure is also becoming totally multidimensional, whether in technologies (diversified and harmonized), applications (free mobile, local, or global), or services (bandwidth on demand). Reconfigurable and adaptive wireless systems will dominate this market in the very near future. With the recent takeoff of 3Gwireless in Europe, a new wireless race has just begun.

As Feature Editor of the Wireless Communications Series, I am privileged to bring exciting state-of-the-art articles to the readers of *IEEE Communications Magazine*. In the following series we will present the latest updates on the emerging wireless advancements, as well as potential business opportunities. My team will work hard to improve the paper submission and review process, and continue to cooperate with leading technical bodies to enhance our technical standing in the industry. We have successfully created a database which contains over 500 wireless experts worldwide; founded many feature conferences on emerging topics (e.g., 3Gwireless '00, WAS '00); launched several technical fora on next-generation wireless; and broadened our relations with other IEEE publications. We will also work with the Communications Society to enforce our leadership in wireless standardization activities, essential to our growth and success.

This issue presents two articles on 3Gwireless and beyond. In the first article, "Compact Multi-Dimensional Broadband Wireless — Convergence of Wireless Mobile and Access," I propose to construct an open broadband wireless core for the mobile and access applications. As wireless goes multidimensional and the Internet goes wireless, this new compact architecture will surely trigger a new revolution in wireless communications. This article is based on my earlier featured speech at Stanford University as well as numerous invited talks worldwide.

The second article, by Byeong Gi Lee and Byoung-Hoon Kim, "DSA Techniques for Fast and Robust Acquisition of DS/CDMA Scrambling Codes," focuses on the distributed sample-based acquisition system recently introduced for fast and robust synchronization of the long-period scrambling codes in a W-CDMA environment. This topic is very essential for 3Gwireless implementations.

I would like to extend my thanks to Vijay K. Garg and Joe Wilkes, the former co-editors of the series. They devoted a large portion of their time and effort to make this a continuing series. I would also like to welcome Moshe Zukerman of the University of Melbourne, Australia, on board. I expect our services to raise the value of this magazine as we bring the best articles to our membership and readers.

I would also like to thank our reviewers, who have been a tremendous help in selecting the best articles and providing insightful comments to the authors. We extend the invitation to all of our colleagues to join the wireless review team. If you are interested, please e-mail me at wwlu@ieee.org.

We welcome article contributions, feedback, and suggestions for future topics on emerging wireless communications.

BIOGRAPHIES

WILLIE W. LU [SM] (wwlu@ieee.org), principal senior wireless architect at Siemens-Infineon, has extensive research, publication, consulting, and industrial experience in the design and analysis of advanced wireless telecommunication systems and networks, computer communication systems, local, metropolitan, and wide area communications networks, marketing analysis, and planning. He has profound expertise in the implementation of software-definable base station technology, wireless mobile ATM technology, third-generation wireless communications, broadband wireless access, wireless mobile internet and high-speed packet networks as well as IP/ATM network interconnections. He is also chair of the Wireless Mobile ATM Task Force, CDMA Technical Forum, and 3Gwireless Technical Forum, technical teams of telecommunications and wireless communications experts who develop and implement next-generation wireless multimedia systems. Previously, he served as guest scientist at the German National Research Center for Information Technology (GMD), Berlin. His other work has involved the design of the U.S. CDMA system at Nortel and a wireless data network at NTT. He is highly accredited and an invited senior technical advisor by major telecom industries in the United States and Europe as well as a senior consultant to many telecom authorities in the world.many venture capitals in the Silicon Valley as well as an external examiner for many universities on the doctorate program.