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Editorial

European Wireless^{Q1}

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When organizing the 4th edition of the ‘European Wireless’ conference on *Next Generation Wireless Networks: Technologies, Protocols, Services, and Applications*, held in Florence, Italy, in February 2002, we realized very early on that an ideal conclusion would have been to select some of the best presented papers, and to collect them into a Special Issue of the European Transactions on Telecommunications. Such a possibility came to our minds as soon as we recognized the large number of high-quality contributions we were receiving, and we considered it the best way to add permanent value to the outcomes of the meeting. Therefore, this Special Issue is based on nine extended papers that were originally presented at the conference in short form (together with some 140 more, a few tutorials, and a panel on Future Wireless Systems), under the general chairmanship of Luciano Lenzini, from the University of Pisa.

The European Wireless (EW) series of conferences has been successful so far in presenting unpublished scientific results from academia and industry on wireless and cellular radio systems and networks, and has been able to bring together both radio technology and protocols/networking experts. In fact, one of the main tasks of the conference series is fostering the interaction between these two (sometimes unduly separated) communities, and we can say that this goal has been reached on this occasion to an unexpectedly high degree. It is worth mentioning that the European Wireless conferences are interleaved on a yearly basis with a sister series of conferences, the European Personal and Mobile radio Communications Conference (EPMCC) that will have its next event in Glasgow, 22–24 April 2003. The next EW will take place in Barcelona, Spain, in February 2004 under the chairmanship of Olga Casals from the Polytechnic University of Catalonia.

EW 2002 focused primarily on advances and novelties in wireless communications, narrowband cellular and

broadband mobile radio, and on mobility support by fixed networks. Integration of mobile radio into the telecommunication and computer communications world were further areas for discussion. In detail, EW 2002 had three tracks to group the 150 presented papers (out of the 230 submitted) thematically. Track A was focused on progress in networking, protocols and quality of service, and featured sessions on HiperLAN2, Bluetooth, PTM wireless networks, mobility with TCP/IP, *ad hoc* networks, quality of service (QoS) in wireless, energy-efficient computation, MAC protocols for QoS, and security. Track B was devoted to physical layer and protocol issues for CDMA and multi-carrier-based transmission systems, featuring sessions on admission control, wireless application protocols, resource scheduling algorithms, MC-CDMA and OFDM techniques, capacity of wireless networks, mobile internet QoS, advanced wireless systems, mobile agents, and advanced signal processing. Track C dealt with the most recent advances in 2G, 2.5G and 3G radio technologies, and was based on sessions on broadband wireless access, second- to third-generation systems, antenna design and cell layout, channel modeling, equalization and channel estimation, modulation and signal synchronization, space-time signal processing, applied channel coding, power control and QoS and multi-user detection and interference mitigation for CDMA systems.

This Special Issue contains papers that were presented in a shorter form, mainly within track C, with some in track B as well. The first one, by Tuninetti and Caire is an information-theoretical analysis on the ultimate capacity limits of a wireless channel with Rayleigh fading and energy/delay signal constraints. Next is a paper by Shibahara, Fujii, Sasase and Saba on the use of (frequency) spreading and interleaving to improve the effect of channel coding in OFDM systems. This is followed by the paper by

R. Wang, Z. Wang and Giannakis on space-time communications for (multiple-input, multiple-output) multiantenna wireless systems. The fourth contribution by Chen and Yao describes a subspace-based algorithm for equalization and detection of MC-CDMA signals on a frequency-selective wireless channel. Following is the paper by Yang and Chang on a strategy to assign more than one single spreading code to each user of a CDMA network. The list goes on with a study by Hoppe, Wertz, Landstorfer and Wölfle on the possibility to speed up and improve the accuracy of ray-tracing algorithms for the computation of electromagnetic fields. The last full paper is by Lončar, Mecklenbräuker and Müller, and tackles the

issue of iterative joint data demodulation and channel estimation in a GSM receiver in the presence of co-channel interference. This Special Issue is then completed by two Letters: the first is by Mochizuki, Asai and Kagami, and describes a method to implement optimum transmission diversity in multi-antenna OFDM systems; the second is by Xiao and Ström, and presents a comparative analysis of a few initial code acquisition algorithms for CDMA communications.

We hope that the contributions collected in this ETT Special Issue may give more insight into the many exciting issues of wireless communications, and we are convinced that ETT readers will enjoy them. We certainly did.