

# Preface

This book contains most of the scientific results achieved within the framework of the European Cooperation in Science and Technology (COST) Action 2100 titled “Pervasive Mobile and Ambient Wireless Communications”. The Action (see [www.cost2100.org](http://www.cost2100.org) for details) was launched in December 2006 and finished in December 2010. Nearly 600 researchers affiliated to 142 research institutions (Universities, industries and research centres) from 35 countries were active at the end of the project; while most of them were from Europe, companies like Motorola, Azimuth Systems, NTT Docomo and others, were participating from North America and Asia. These researchers presented and discussed 880 scientific articles during the 12 meetings held within four years of activity. This book summarises and presents under a coherent view the contents of a large part of them; those addressing the scientific topics which attracted more interest during the four years brought to larger international visibility the activities of the Action because of the scientific relevance of the researchers involved and the topics.

The COST Action 2100 inherited from the previous Actions on mobile and wireless communications (COST 207, 231, 259, 273) many things: among these, a strong spirit of cooperation, a very large critical mass of researchers and institutions, a deep interaction between academia and industry.

The spirit of cooperation is the engine which allowed the achievement of results that a single research institution cannot reach: the book chapters dedicated to the radio channel present models based on the effort of many researchers, integrating different views and backgrounds; some of these chapters report measurements which were achieved through joint campaigns.

The critical mass around some specific topics, like MIMO or Radio Resource Management of 4G networks, allowed the determination of concerted views and the achievement of results of interest to a wide community of researchers; also, this permitted the creation of working groups addressing some specific topics, like body communications, of innovative nature.

The strong interaction between academia and industry made some of the working groups, like the one dealing with Over-The-Air antenna test methods, a reference point for the scientific world, able to interact and determine the choices made within standardisation bodies like 3GPP.

This book is not only the outcome of four years of activity; it is the intermediate step of a cooperative process started in the 1980s with COST 207, which will progress with the new COST Action born under the auspices of COST 2100: IC1004 “Cooperative Radio Communications for Green Smart Environments”. This process contributed in the past to the development of radio systems like GSM and UMTS; with COST 2100, it contributed to the development of 4G networks and their sub-systems. Therefore, this book is of interest to researchers, both in academia and industry, and PhD students who are willing to inherit part of the COST 2100 spirit and achievements, and extend them to the study and design of current and future generation mobile and wireless networks.

The book has been contributed by about one hundred researchers, whose names appear in the List of Contributors. I want to thank all of them and all the researchers involved in COST 2100, who made this story a success. The huge effort of summarising and making the contents coherent was in the hands of the Chapter Editors, to whom I am very grateful for their dedication. Their names are reported at beginning of each chapter; in almost all cases they were leading the working groups dedicated to the specific topics in COST 2100. Each chapter of the book has been revised by an external advisor, a scientist not directly involved in COST 2100, who provided comments and suggestions on how to improve the readability of the various chapters; on behalf of the whole group of Chapter Editors, I would like to acknowledge Hanna Bogucka, Carla-Fabiana Chiasserini, Ernst Bonek, Maxime Guillaud, Ove Linnell, Ignacio Llatser, Dirk Manteuffel, Marta Martinez-Vázquez, Andreas Molish, Juan Mosig, Sergio Palazzo, Jordi Perez-Romero, Josep Sole Pereira, Luc Vandendorpe. My warmest thank goes however to the Co-Editor of this Book, Alberto Zanella, who made most of the editorial job. Finally, since the book represents the ultimate outcome of four years of activities, I want to express my eternal gratitude to the people who shared with me all discussions on scientific, administrative, operational aspects of the Action during the four years, meeting regularly the day before each of the twelve COST 2100 events: the Vice-Chairman, Joerg Pamp, the former Chairman, Luis Correia, the three working group leaders, Alister Burr, Narcis Cardona and Alain Sibille, the Chair Assistant, Virginia Corvino, and the COST 2100 secretary, Silvia Zampese. Each of these people contributed somehow to the contents of this book and to a wonderful personal and professional experience. Finally, the Memorandum of Understanding jointly signed with NEWCOM++ (January 2008–April 2011), the FP7 Network of Excellence in Wireless Communications, should be mentioned; under its auspices, COST 2100 and NEWCOM++ shared resources, and jointly organised several successful events (workshops, training schools). NEWCOM++ is publishing for the same publisher, Springer, a Vision Book, which provides a concerted view on the research trends and millennium problems that need to be addressed in the next decade in the area of wireless communications; the NEWCOM++ Vision Book can be considered as a sort of completion of the framework addressed by this COST 2100 book.

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