Foreword

In the past two decades, we have witnessed tremendous advances in wireless technologies, in particular those aimed at personal and mobile communications using cellular and ad hoc configurations. Cellular mobile communication, considered a luxury in the early 1990s, has become one of the everyday necessities for hundreds of millions of people all around the world in less than 20 years. Applications have changed dramatically from simple voice telephony to a wide range of multimedia applications. Exponential advancement in VLSI technology and liquid crystal display at the same time provided telecommunications engineers with an unbelievable electronic gadget in people's pockets. Ubiquitous communications has therefore become a reality and an all-in-one device is no longer a dream. Television broadcasting has found a new direction through the digital era, from large wall-mounted displays to the smaller and more private displays of mobile phones.

Wireless communications has had to develop at the same pace as its hardware and software counterparts in mobile devices so that they can be connected to content providers over the Internet and the telecommunications backbones. New wireless technologies have been added to the single cellular air interface mobile phones. These days we see smart phones with several air interfaces, all built on a tiny chip. They can connect simultaneously to wireless local area networks; second-generation networks such as GSM and GPRS; third generation networks like UMTS; and Bluetooth, in multiple frequency spectra. Those devices sometimes even come with their own satellite navigation system, which can locate the device and provide further information to users. With the inclusion of Windows-based operating systems on mobile devices, the user device is no longer just a phone but a handy personal computer with the usual myriad applications.

With all these advances, mobile multimedia is in our hands and the important issue is how the service quality can be maintained at a level similar to what we had in the past and which users have come to expect. The topic of mobile multimedia quality of service therefore remains the most important issue to be dealt with by telecommunications engineers.

In the past ten years, we have seen many works in the literature on the topic of quality of service in mobile environment. Dr. Nicola Cranley and Prof. Liam Murphy have put together an excellent edition of chapters, carefully chosen, reviewed, and edited in their book covering the technical solutions to this problem. They break down the problem nicely into three parts: network layer, application layer, and end-user layer, which can serve as the main elements in providing end-to-end quality of service to mobile multimedia applications. As quality of service provisioning requires good cooperation among communication layers and is not achievable by individual layer's attempts, the last part of the book addresses cross-layer solutions to the problem.

Nicola and Liam have selected a wide range of experts from all over the world to detail the problems and possible solutions in this harmonized edition. The book, while written by many authors, is read as a single piece of work with a focused and understandable theme right throughout the entire edition. I

believe *Wireless Multimedia: Quality of Service and Solutions* will stand out as a long lasting reference book in the field of mobile multimedia for many years to come. I am confident that the tutorials and research works presented in this book will further seed new research topics in the field for a better and more efficient use of hardware and software advancements to achieve mobile multimedia communications into the future.

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Abbas Jamalipour *holds a PhD from Nagoya University, Japan. He is the author of the first book on wireless IP and two other books, and has co-authored six books and over 180 technical papers, all in the field of mobile communications networks. He is a fellow of IEEE (for contributions to next generation networks for traffic control), a fellow of Institute of Engineers Australia; an IEEE distinguished lecturer; the editor-in-chief of the IEEE Wireless Communications; and a technical editor of several scholarly journals including IEEE Communications, Wiley International Journal of Communication Systems, Journal of Communication Network, etc. His areas of research are wireless data communication networks, wireless IP networks, next generation mobile networks, traffic control, network security and management, and satellite systems. He was one of the first researchers to disseminate the fundamental concepts of the next generation mobile networks and broadband convergence networks as well as the integration of wireless LAN and cellular networks; some of which are being gradually deployed by industry and included in the ITU-T standards. Prof. Jamalipour has authored several invited papers and been a keynote speaker in many prestigious conferences. He served as the chair of the Satellite and Space Communications Technical Committee (2004-06); and currently is the vice chair of Communications Switching and Routing TC; and chair of Chapters Coordinating Committee, Asia-Pacific Board, all from the IEEE Communications Society. He is a voting member of the IEEE GITC and IEEE WCNC Steering Committee. He has been a vice chair of IEEE WCNC2003 to 2006, program chair of SPECTS2004, chair of symposiums at IEEE GLOBECOM2005 to 2007 and IEEE ICC2005 to 2008, among many conference leadership roles. He has received several prestigious awards, such as 2006 IEEE Distinguished Contribution to Satellite Communications Award, 2006 IEEE Communications Society Best Tutorial Paper Award, and 2005 Telstra Award for Excellence in Teaching.*