This special issue of the *International Journal of Mobile Computing and Multimedia Communications* (IJMCMC) has been published in recognition of the quality of papers presented at the third edition of the International Conference on Next Generation Networks and Services (NGNS’11, http://ngns2011.regim.org/), held in Hammamet, Tunisia, in the period 18-20 December, 2011. Next generation networks (NGNs) are nowadays one of the main topics of research and development in the networking arena. A NGN is an advanced, packet-based network that exploits multiple broadband, QoS-enabled transport technologies to provide telecommunication services. The objective of NGN is to focus on users and those service-related functions that are independent of underlying transport-related technologies. With the advent of NGN, services that are currently provided by multiple specific network-centric architectures are migrated toward a single, converged, user-centric communication network. NGN provides AAA (Anytime, Anywhere and Always on) access to users from different service providers with consistent and ubiquitous provision of services as necessary. The principles and requirements of Convergence of Fixed and Mobile Networks (FMC) and IP Multimedia Sub-layer (IMS) are likely to deliver all the desired benefits of NGN and should be carefully examined and studied.

NGNS’11 comes to confirm the interest that NGNs enjoy from the research community as well as from the industrial and economic sectors. NGNS’11 has as main objective to report on the state-of-the-art research on next generation networks and services. NGNS’11 is a forum for researchers and practitioners working on the field to share their research results, knowledge and experience and a great opportunity for them to develop fruitful partnerships.

NGNS’11 is organized by the e-NGN research group (http://www.e-ngn.org) in cooperation with the University of Sfax, National School of Engineers (ENIS), Tunisia. The conference covers a broad spectrum of topics, including Wireless, Ubiquitous Technologies and Communications, and Pervasive Computing, QoS and Performance Evaluations, Applications and Services for Next Generation Networks and Web Based Systems.
Eighty-three papers were submitted to NGNS’11. Only 23 papers (27%) were accepted for oral presentations. Accepted papers are characterized by a high scientific quality. Each paper was reviewed by at least three members of the program committee, which consisted of more than 90 scientists from 16 countries.

Among the 23 papers, six papers have been selected for publication in this special issue of the IJMCMC. Authors of these selected papers have been asked to extend their papers and to up-to-date their references. Each selected paper treats a problem related to one of the topics cited above.

We would like to thank the organizers of the NGNS’11 international conference and in particular Dr. Adel M. Alimi and Dr. Chokri Ben Amar, the General co-Chairs and Dr. Monji Kherallah, the Conference co-Chair, Dr. Ilhem Kallel, Dr. Joel Rodrigues and Dr. Rachida Ajjoun, the Program Committee co-Chairs, Dr. Tarek M. Hamdani, the Organizing Committee co-Chairs and also the other committee members and particularly Dr. Amine Berqia, Dr. Driss Bouzid, Dr. Driss El Ouadghiri and Dr. Saliah-Hassane Hamadou from the steering committee, for their efforts in organizing and enhancing the conference.

We are grateful to the International Journal of Mobile Computing and Multimedia Communications for giving NGNS’11 this remarkable opportunity, and to the editorial board to publish this special issue. Special thanks go to Dr. Ismail Khalil, co-Editor-in-Chief of the IJMCMC, for his valuable support and his patience throughout the preparation of this Special Issue.

We would like to thank also all authors who have presented their papers to the NGNS’11 international conferences and those whose papers have been selected for this special issue.

Finally, the Guest Editors wish to gratefully acknowledge the support of all the reviewers who have generously given their time to review the papers submitted to the NGNS’11 international conference.

Brief summaries of the six selected papers for this special issue are presented below.

The first paper by Mehdi Adda, titled “Progressive Data Synchronization Model for Mobile Devices” is interested in Mobile data synchronization which is an important technique used to replicate or synchronize data between a mobile client and a remote server. It helps overcome unstable wireless networks and support the disconnected operation. The paper puts forward a new model of data synchronization in mobile devices based on progressive data access schema.

The second paper by EL Moukhtar Zemmouri, Hicham Behja, Abdelaziz Marzak, and Brigitte Trouse titled “Ontology-Based Knowledge Model for Multi-View KDD Process” is interested in Knowledge Discovery in Databases (KDD), which is a highly complex, iterative and interactive process that involves several types of knowledge and expertise. Authors propose to support users of a multi-view analysis (a KDD process held by several experts who analyze the same data with different viewpoints). Their objective is to enhance both the reusability of the process and coordination between users.

The third paper by Ines Ben Messaoud, Hamid Amirri, Haikal El Abed, and Volker Märgner, titled “Collaborative Access to Ancient Documents: Towards a Distributed Comparison of Pre-Processing Approaches” proposes a new application to integrate to the Next Generation Network at the services and application layer. This application is a new framework for the evaluation of binarization approaches. The comparison between binary and ground-truth images is based on several evaluation metrics. A method for ground-truth generation is added to this framework. The training of the proposed method of ground-truth generation was applied on images from a benchmarking dataset, which presents the corresponding ground-truth for each image in order to ascertain the best parameters. The proposed framework was tested on entire historical document datasets using the state-of-the-art binarization methods.
The fourth paper by Abdelali El Bouchti, Said El Kafhali, and Abdelkrim Haqiq, titled “Quality of Service Analysis and Queuing Performance Modeling of Orthogonal Frequency Division Multiple Access Based IEEE 802.16/WiMAX System” presents a problem of queuing theoretic performance modeling and analysis of Orthogonal Frequency Division Multiple Access (OFDMA) under broadband wireless networks. Authors consider a single-cell WiMAX environment in which the base station allocates sub channels to the subscriber stations in its coverage area. The sub channels allocated to a subscriber station are shared by multiple connections at that subscriber station. To ensure the Quality of Service (QoS) performances, a Connection Admission Control (CAC) mechanism is considered at a subscriber station. A queuing analytical framework for these admission control mechanisms is presented considering OFDMA-based transmission at the physical layer. Then, based on the queuing model, both the connection-level and the packet-level performances are studied and compared with their analogues in the case without CAC.

The fifth paper by Walid Hakimi and Ammar Mahmoud, titled “Performance Evaluation of Space-time and Harq Diversity in MIMO HSDPA” proposes a MIMO Alamouti-based combined with HARQ technique. The fundamental performance of Hybrid ARQ protocols are studied in a multiple-antenna channel. The new technique exploits both the space-time coding gain of Alamouti STC and the packet combining gain. This study has put in evidence the potentiality of two antennas Space-time coding in HSDPA where modulation symbols are mapped in the time and spatial (transmit-antenna) domain to capture the diversity offered by the multiple transmit antennas.

The sixth paper by Abdelaali Chaoub and Elhassane Ibn-Elhaj, titled “Performance Evaluation of Multimedia Traffic Transmission under Binomial and Poissonian Primary Traffics in Cognitive Radio Networks” treats the problem of distributed multimedia traffic transmission over Cognitive Radio networks. Progressive source coding jointly with channel coding have been employed to protect the secondary media. Authors consider the primary traffics that fit well with the Poissonian and the Binomial Processes. They have evaluated the performance of a secondary transmission under three major reasons for packets to be corrupted: Primary reclaims mutual cognitive devices collisions and fading across the spectral resources. The achieved results prove that there is always a tradeoff to reach between the Spectral Efficiency of the system and the frequency resources involved in the transmission in order to meet the QoS requirements for multimedia communication services in secondary use.

We hope that the readers of this Special Issue enjoy this great selection of papers covering some aspects of NGNS.

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Guest Editors
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Abdelkrim HAQIQ has a High Study Degree (DES) and a PhD (Doctorat d'Etat) both in Applied Mathematics from the University of Mohamed V, Agdal, Faculty of Sciences, Rabat, Morocco. Since September 1995 he has been working as a Professor at the department of Mathematics and Computer at the Faculty of Sciences and Techniques, Settat, Morocco. He is the director of Computer, Networks, Mobility and Modeling laboratory and a general secretary of e-NGN research group, Moroccan section. He was the Chair of the second international conference on Next Generation Networks and Services, held at Marrakech, Morocco 8 - 10 July 2010 and he is the TPC Chair of the fourth international conference on Next Generation Networks and Services, which will be held at Algarve, Portugal 2 – 4 December 2012. He is also a TPC member and a reviewer for many international conferences. Professor Haqiq’ interests lie in the areas of applied stochastic processes, stochastic control, queuing theory, game theory, Petri Nets and their applications for modeling/simulation and performance analysis of computer communication networks. He is the author and co-author of more than 40 papers (international journals and conferences/workshops). From January 98 to December 98 he had a Post-Doctoral Research appointment at the department of systems and computers engineering at Carleton University in Canada. He also has held visiting positions at the High National School of Telecommunications of Paris, the universities of Dijon and Versailles St-Quentin-en-Yvelines in France, the University of Ottawa in Canada and the FUCAM in Belgium.

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