Guest Editorial

Next generation mobile networks will be based on Internet core networks and wireless access networks. The need for efficient merging of the wired and wireless infrastructure as well as the new multimedia services and applications of next generation networks call for novel network architectures, protocols and traffic-related mechanisms. These can only be achieved through open international co-operation of both engineering, lead by the IETF, and academic efforts. The COST Action 290 – Traffic and QoS Management in Wireless Multimedia Networks aims at the coordination, from a European perspective, of concerted actions among participating organizations and research groups active in the field of advanced multi-service wireless networks, and specifically on traffic nature and behavior and its impact on network architecture, performance and planning. COST sponsorship is also used for other existing events to give them the appropriate focus.

As in 2006, in 2007 WWIC was selected as the official conference by COST Action 290, and Springer accepted to publish the conference proceedings in the LNCS series. WWIC 2007 was organized by the University of Coimbra, Portugal, and it was the fifth event of a series of International Conferences on Wired/Wireless Internet Communications, addressing research topics such as the design and evaluation of protocols, the dynamics of the integration, the performance tradeoffs, the need for new performance metrics, and cross-layer interactions. Previous events were held in Berne (Switzerland) in 2006, Xanthi (Greece) in 2005, Frankfurt (Germany) in 2004 and Las Vegas (USA) in 2002.

Based on the WWIC 2007 outcome and on the need to deepen certain topics from a more focussed perspective, COST 290 has accepted the kind invitation of the Journal of Internet Engineering to prepare a special issue.

This Special Issue is devoted to the best papers presented at the 5th International Conference on Wired/Wireless Internet Communications, WWIC 2007, held in Coimbra. The authors of selected papers were asked to produce extended and updated versions of their papers and to submit them to a selection process for publication in this Special Issue. After this selection process, from the 32 papers presented at WWIC 2007, seven of them were finally accepted (22% acceptance ratio) for publication in this Special Issue. These papers cover wireless sensor networks, ad-hoc networks, home networks, vehicular networks, wireless LANs, QoS support in heterogeneous mobile environments, and misbehavior detection.

In the paper '*Distributed Event Tracking and Classification in Wireless Sensor Networks*', the authors address the issue of providing an accurate, distributed, fast and efficient event detection and tracking algorithm**,** capable of working in many scenarios including dust environments with small radio ranges and high sensing ranges.

The paper '*Design and Evaluation of two Geocast Protocols for Vehicular Ad-hoc Networks'* proposes two location-based multicast routing protocols for Vehicular ad-hoc networks (VANETs) applications. The Distributed Robust Geocast (DRG) protocol is developed for applications that require a fast and reliable transmission without any end-to-end QoS requirements, whereas the RObust VEhicular Routing (ROVER) Protocol is aimed at applications that require end-to-end QoS.

The paper *'Experiences with a Flexible QoS Capable Residential Gateway within a Multiservice Framework'* investigates the architecture of a residential gateway prototype designed and implemented within the framework of the European IST research project MUSE. The paper describes the different experiences performed with the prototype with special emphasis on the QoS capabilities of the residential gateway as well as on authentication and auto-configuration features.

In the paper *'A Cross Layer Solution to Address TCP Intra-flow Performance Degradation in Multihop Ad hoc Networks',* the authors describe a novel cross layer solution called "TCP Contention Control" that dynamically adjusts the amount of outstanding data in the network based on the level of contention experienced by packets as well as the throughput achieved by connections. The simulation results show that the proposed mechanism can drastically improve TCP stability over 802.11 multihop ad-hoc networks.

The paper '*An Analytical Approach to Characterize the Service Process and the Tradeoff between Throughput and Service Time Burstiness in IEEE 802.11 DCF*' proposes a characterization of the probability distribution of the service time process in saturated IEEE
802.11 wireless LANs under the DCF MAC protocol. The proposed model is explored in order to show that a minor throughput loss can bring about a major benefit in service time smoothness.

In the paper '*Mobility and QoS Support for Multi-user Sessions over Heterogeneous Networks*', the authors propose a solution to allow seamless mobility for multi-user sessions over heterogeneous networks with mobile receivers and static senders. The proposal integrates end-to-end Quality of Service (QoS) mapping, QoS adaptation and connectivity control with seamless mobility support.

The motivation for the problem addressed in the paper '*Detection and Accusation of Packet Forwarding Misbehavior in Mobile Ad-Hoc Networks*' arises from the need to effectively address security attacks in ad-hoc networks. In this paper, the authors present a mechanism capable of detecting and accusing nodes that exhibit packet forwarding misbehavior.

As a final remark, the guest editors would like to thank all the reviewers for their effort in putting together this special issue.

Guest Editors:

Fernando Boavida, University of Coimbra, Portugal
Edmundo Monteiro, University of Coimbra, Portugal
Saverio Mascolo, Polytechnic of Bari, Italy
Yevgeni Koucheryavy, Tampere University of Technology, Finland