

# Lecture Notes of the Institute for Computer Sciences, Social-Informatics and Telecommunications Engineering

45

## Editorial Board

Ozgur Akan

*Middle East Technical University, Ankara, Turkey*

Paolo Bellavista

*University of Bologna, Italy*

Jiannong Cao

*Hong Kong Polytechnic University, Hong Kong*

Falko Dressler

*University of Erlangen, Germany*

Domenico Ferrari

*Università Cattolica Piacenza, Italy*

Mario Gerla

*UCLA, USA*

Hisashi Kobayashi

*Princeton University, USA*

Sergio Palazzo

*University of Catania, Italy*

Sartaj Sahni

*University of Florida, USA*

Xuemin (Sherman) Shen

*University of Waterloo, Canada*

Mircea Stan

*University of Virginia, USA*

Jia Xiaohua

*City University of Hong Kong, Hong Kong*

Albert Zomaya

*University of Sydney, Australia*

Geoffrey Coulson

*Lancaster University, UK*

Periklis Chatzimisios Christos Verikoukis  
Ignacio Santamaría Massimiliano Laddomada  
Oliver Hoffmann (Eds.)

# Mobile Lightweight Wireless Systems

Second International ICST Conference  
MOBILIGHT 2010  
Barcelona, Spain, May 10-12, 2010  
Revised Selected Papers

## Volume Editors

Periklis Chatzimisios

Technological Educational Institution of Thessaloniki, Department of Informatics

57400 Sindos, Thessaloniki, Greece

E-mail: pchatzimisios@ieee.org

Christos Verikoukis

Centre Tecnològic de Telecomunicacions de Catalunya

Parc Mediterrani de la Tecnologia, 08860 Castellfells, Barcelona, Spain

E-mail: cveri@cttc.es

Ignacio Santamaría

Universidad de Cantabria, Dpto. Ingeniería de Comunicaciones

39005 Santander, Spain

E-mail: nacho@gtas.dicom.unican.es

Massimiliano Laddomada

Texas A&M University, Texarkana, TX 75505-5518, USA

E-mail: mladdomada@tamut.edu

Oliver Hoffmann

TU Dortmund, Lehrstuhl für Kommunikationstechnik

Otto-Hahn-Str. , 44221 Dortmund, Germany

E-mail: oliver.hoffmann@tu-dortmund.de

Library of Congress Control Number: 2010937768

CR Subject Classification (1998): C.2, D.2, C.4, K.6.5, C.2.4, D.4.4

ISSN 1867-8211

ISBN-10 3-642-16643-1 Springer Berlin Heidelberg New York

ISBN-13 978-3-642-16643-3 Springer Berlin Heidelberg New York

This work is subject to copyright. All rights are reserved, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, re-use of illustrations, recitation, broadcasting, reproduction on microfilms or in any other way, and storage in data banks. Duplication of this publication or parts thereof is permitted only under the provisions of the German Copyright Law of September 9, 1965, in its current version, and permission for use must always be obtained from Springer. Violations are liable to prosecution under the German Copyright Law.

springer.com

© ICST Institute for Computer Science, Social Informatics and Telecommunications Engineering 2010  
Printed in Germany

Typesetting: Camera-ready by author, data conversion by Scientific Publishing Services, Chennai, India  
Printed on acid-free paper SPIN: 06/3180 5 4 3 2 1 0

## Foreword

Following the success of the First MOBILIGHT 2009 in Athens, Greece, the Second International Conference on Mobile Lightweight Systems (MOBILIGHT) was held in Barcelona, Spain on May 10-12, 2010.

It was not an easy decision to carry on organizing a scientific event on wireless communications, where competition is really enormous. This decision was motivated by discussion with many colleagues about the current unprecedented demand for lightweight, wireless communication devices with high usability and performance able to support added-value services in a highly mobile environment. Such devices follow the users everywhere they go (at work, at home, while travelling, in a classroom, etc.) and result in exciting research, development and business opportunities. Such scenarios clearly demand significant upgrades to the existing communication paradigm in terms of infrastructure, devices and services to support the “anytime, anywhere, any device” philosophy, providing novel and fast-evolving requirements and expectations on research and development in the field of information and communication technologies. The core issue is to support wireless users' desire for 24/7 network availability and transparent access to “their own” services.

In this context, we continue to envision an international forum where practitioners and researchers coming from the many areas involved in lightweight wireless systems' design and deployment would be able to interact and exchange experiences. For this reason, MOBILIGHT was again targeted toward information exchange and cross-fertilization among the different worlds of academia, research centers and industry through the organization of specific and interacting tracks related to: (1) technology, including wireless (WPAN, WLAN, WMAN/cellular) as well as architectures and design methodologies to support seamless access to the communication facility; (2) services, in the vision of “always on” requirement; (3) business models, opportunities and solutions.

The Technical Program Committee of MOBILIGHT 2010 gathered more than 60 leading scientists and was assisted by at least 30 additional external reviewers, originating from more than 20 countries worldwide. More than 100 registered participants attended MOBILIGHT 2010. The conference attracted more than 90 submissions, and the final technical program encompassed 65 high-quality research papers organized in three workshops and ten special sessions, most of them including up-to-date results from research projects funded by the European Commission (NEWCOM++, REWIND, MIMAX, OMEGA, SELF-NET, ICARUS, MOBILIA, INSPIRE). All submitted papers were peer-reviewed by at least three independent reviewers (including two TPC members) to ensure high quality and standards.

The technical program of MOBILIGHT 2010 also included four plenary talks by internationally recognized industrial and academic leaders, covering up-to-date research and development topics, as well as funding opportunities within the international and European research communities. Moreover, the technical program included

two tutorials focused on a machine-to-machine communication paradigm in addition to basics and future developments of radio communications. Finally, two panels took place in order to provide discussion between the audience and top-level experts from research and industry. Selected topics for this year were “Wireless Communications for Improving Security in High-Speed Railway Transportation Systems” and “Future and Applications of Wireless Mesh Networks.”

We would like to express our gratitude to all the people of the organizing committee for their hard teamwork and true dedication. In particular, our gratitude goes to the Technical Co-chairs, Ignacio, Massimiliano and Oliver, for their constant support and fruitful suggestions, to ICST and CREATE-NET for providing technical and financial sponsorship of the event and, last but not least, to Prof. Imrich Chlamtac for his precious suggestions and his vision. But most of all, we would like to thank the authors and contributors for trusting the organizing committee and giving us the chance to set up a high-level technical program. Lastly, we are very grateful for all the hard work done and the support offered by all the reviewers for the thorough review reports and constructive remarks aimed ensuring at high technical quality.

The conference proceedings are published by Springer and will be available in Springer’s *Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering* (LNICST). Selected high-quality papers will be invited to special issues in prestigious international journals. Detailed information and photos are available at the conference website, <http://www.mobilight.org>.

We are looking forward to meeting you at the next MOBILIGHT 2011 that will be held in Bilbao (Basque Country), Spain, in May 2011.

Periklis Chatzimisios  
Christos Verikoukis

# Organization

## Steering Committee

Imrich Chlamtac	CREATENET, Italy
Fabrizio Granelli	University of Trento, Italy
Charalabos Skianis	University of Aegean, Greece

## Conference General Chairs

Periklis Chatzimisios	Alexander TEI of Thessaloniki, Greece
Christos Verikoukis	CTTC, Spain

## Technical Program Chairs

Ignacio Santamaría	University of Cantabria, Spain
Massimiliano Laddomada	Texas A&M University-Texarkana, USA
Oliver Hoffmann	Dortmund University of Technology, Germany

## Tutorial Chair

Ana García Armada	Universidad Carlos III de Madrid, Spain
-------------------	---

## Special Sessions / Workshop Chairs

Ioannis Chochliouros	OTE, Greece
Javier Del Ser	ROBOTIKER-Tecnalia, Spain

## Publications Chair

Jesús Alonso	Zárate CTTC, Spain
--------------	--------------------

## Publicity Co-chairs

Marco Di Renzo	CNRS, France
Nizar Zorba	University of Jordan, Jordan
Thomas Lagkas	University of Western Macedonia, Greece



Michael D. Logothetis	DECE - University of Patras, Greece
Pascal Lorenz	University of Haute Alsace, France
Stefan Mangold	Swisscom, Switzerland
Sebastian Max	RWTH Aachen University, Germany
Marina Mondin	Politecnico di Torino, Italy
Ioannis Moscholios	University of Peloponnese, Greece
Qiang Ni	Brunel University, UK
Stefan Nowak	Dortmund University of Technology, Germany
Kostas Pentikousis	VTT, Finland
Christos Politis	Kingston University, UK
Simone Redana	Nokia Siemens Networks, Germany
Holger Rosier	RWTH Aachen University, Germany
Isabelle Siaud	France Telecom, France
Harry Skianis	University of Aegean, Greece
John Soldatos	Athens Information Technology, Greece
Ilenia Tinnirello	University of Palermo, Italy
Andrea Tonello	University of Udine, Italy
Jose Miguel Torres Avanzit	Spain
Dimitrios D. Vergados	University of Piraeus, Greece
Javier Via	University of Cantabria, Spain
Vasileios Vitsas	TEI of Thessaloniki, Greece
Luca Vollero	Universita Bio-Medico di Roma, Italy
Yang Xiao	University of Alabama, USA
Nizar Zorba	University of Jordan, Jordan
Gil Zussman	Columbia University, USA
Lambros Sarakis	NCSR Demokritos, Greece
Nikos Dimitriou	University of Athens, Greece
Costantinos	Voudouris TEI Athens, Greece
Panagiotis Tsiakas	TEI Athens, Greece
Fernando López	Telefónica I+D, Spain
Sergio Gil-López	ROBOTIKER, Spain
Iraide Unanue	ROBOTIKER, Spain
Andrea Blanco	ROBOTIKER, Spain
Jose Mari Cabero	ROBOTIKER, Spain
Enrique Areizaga	ROBOTIKER, Spain
Askoxilakis Ioannis	FORTH, Greece
Paulo Marques	ICTI, Portugal
Simona Halunga	University "Politehnica" of Bucharest, Romania
Kandeepan Sithamparanathan	CREATNET, Italy
Maciej J. Nawrocki	Wroclaw Research Center EIT, Poland
Jorge Garcia	UPC, Spain
Sherali Zeadally	University of the District of Columbia, USA



## **EUMOBILE 2010 – Organizers**

Tasos Dagiuklas  
Christos Politis

TEI of Mesolonghi, Greece  
Kingston University, UK

## **PHYLOM 2010 – Organizers**

Sergio Gil-Lopez  
Sancho Salcedo-Sanz

Tecnalia-Telecom, Spain  
University of Alcala  
Escuela Politécnica Superior, Spain

## **UAS 2010 – Organizers**

Ondrej Krejcar

Jiri Horak

Marek Penhaker

Technical University of Ostrava  
Centre for Applied Cybernetics, Czech Republic  
Technical University of Ostrava  
Institute of Geoinformatics, Czech Republic  
Technical University of Ostrava  
Centre for Applied Cybernetics, Czech Republic

# Table of Contents

## MobiLight 2010 – Special Session on “Mobility Concepts and IMT-Advanced (MOBILIA)”

Performance of MC-DS-CDMA System in Rayleigh Fading Channel with Non-coherent Combining Schemes and MAI Interference . . . . .	1
<i>Ismahene Ikhlef, Abdellatif Said, Faouzi Soltani, and Faouzi Bader</i>	
Spectral Efficiency Using Combinations of Transmit Antenna Selection with Linear Dispersion Code Selection . . . . .	11
<i>I. Gutierrez and F. Bader</i>	
A Reconfigurable Power Amplifier for Mobile WIMAX Applications . . . .	22
<i>Yolanda Fernández, Miguel Ángel Peña, and Francisco Díaz</i>	
An Access Selection Prototype Based on IEEE 802.21 . . . . .	31
<i>Bruno Cendón, Jesús Herrero, Ramón Agüero, Arancha Rodríguez, Santiago Albillos, Javier Sainz, Aránzazu Sanz, and David Gómez</i>	
Multi-hop Extensions to Heterogeneous Access Network Selection . . . . .	43
<i>Ramón Agüero, Johnny Choque, and Luis Muñoz</i>	
Experimental System Level Platform for B3G Scenarios . . . . .	57
<i>V. Monteiro, J. Bastos, O. Cabral, F. Velez, and J. Rodriguez</i>	

## MobiLight 2010 – Special Session on “QoS Provision in Wireless Networks (QPWN)”

TCP-Aware Forward Error Correction for Wireless Networks . . . . .	68
<i>Dzmitry Kliazovich, Magda Bendazzoli, and Fabrizio Granelli</i>	
Delay Performance Analysis of a Two-Stage Cross-Layer Scheduler for Wireless LANs . . . . .	78
<i>Andreas Könsgen and Carmelita Görg</i>	
Access Network Selection in a Heterogeneous Environment Using the AHP and Fuzzy TOPSIS Methods . . . . .	88
<i>Aggeliki Sgora, Periklis Chatzimisios, and Dimitrios D. Vergados</i>	
Adaptive Message Ferry Route (aMFR) for Partitioned MANETs . . . . .	99
<i>Ting Wang and Chor Ping Low</i>	
Lightweight Mechanisms for Self-Configuring Protocols . . . . .	112
<i>Eleni Patouni and Nancy Alonistioti</i>	

Analysis of the Energy Consumption of JavaScript Based Mobile Web Applications.....	124
<i>Antti P. Miettinen and Jukka K. Nurminen</i>	

## **MobiLight 2010 – Special Session on “Advanced Radio Access Techniques for Energy-Efficient Communications (MIMAX)”**

Equal Gain MIMO Beamforming in the RF Domain for OFDM-WLAN Systems .....	136
<i>Álvaro Gonzalo, Ignacio Santamaría, Javier Vía, Fouad Gholam, and Ralf Eickhoff</i>	
A Framework for the Design Space Exploration of Software-Defined Radio Applications .....	148
<i>Thorsten Jungeblut, Ralf Dreesen, Mario Porrmann, Michael Thies, Ulrich Rückert, and Uwe Kastens</i>	
On the Maximum Efficiency of Power Amplifiers in OFDM Broadcast Systems with Envelope Following .....	160
<i>Robert Wolf, Frank Ellinger, and Ralf Eickhoff</i>	
Equal-Phase Beamforming Architecture for RF-MIMO Antenna Systems .....	171
<i>Fouad Gholam, Javier Vía, Alfredo Nazábal, and Ignacio Santamaría</i>	
Optimal Channel and Power Allocation for Secondary Users in Cooperative Cognitive Radio Networks (Invited Paper) .....	180
<i>Mario Bkassiny and Sudharman K. Jayaweera</i>	

## **MobiLight 2010 – Special Session on “Security and Resilience in the Future Internet (SECURE)”**

User Authentication Method and Implementation Using a Three-Axis Accelerometer .....	192
<i>Alexandros Zaharis, Adamantini Martini, Panayotis Kikiras, and George Stamoulis</i>	
A Correlation Approach to Intrusion Detection .....	203
<i>Massimo Ficco and Luigi Romano</i>	
A Dynamic Key Agreement Mechanism for Mission Critical Mobile Ad Hoc Networking .....	216
<i>Ioannis G. Askoxylakis, Theo Tryfonas, John May, and Apostolos Traganitis</i>	

Stealthy Compromise of Wireless Sensor Nodes with Power Analysis Attacks .....	229
<i>Giacomo de Meulenaer and François-Xavier Standaert</i>	
Sensor Networks – Critical Infrastructure for Society? Challenges for Resilience, Security and Interoperability .....	243
<i>Alistair Munro</i>	
Wide-Weak Privacy-Preserving RFID Authentication Protocols .....	254
<i>Yong Ki Lee, Lejla Batina, Dave Singelée, and Ingrid Verbauwhede</i>	
A Preliminary Study of a Wireless Process Control Network Using Emulation Testbeds .....	268
<i>Michele Guglielmi, Igor Nai, Andres Perez-Garcia, and Christos Siaterlis</i>	
<b>MobiLight 2010 – Special Session on “Self-Management in Future Internet Wireless Networks (SELFNET)”</b>	
CogProt: A Framework for Cognitive Configuration and Optimization of Communication Protocols.....	280
<i>Dzmitry Kliazovich, Neumar Malheiros, Nelson L.S. da Fonseca, Fabrizio Granelli, and Edmundo Madeira</i>	
Topology Control in Self-managed Wireless Networks .....	292
<i>Apostolos Kousaridas and Nancy Alonistioti</i>	
Autonomicity and Self-manageability Techniques in the Scope of the Future Internet’s Evolution.....	302
<i>Ioannis P. Chochliouros, Anastasia S. Spiliopoulou, Maria Belesioti, Evangelos Sfakianakis, George Diakonikolaou, Andreas Rigas, Evangelia Georgiadou, George Agapiou, and Tilemachos Doukoglou</i>	
Design and Development of Essential Use-Cases for Self-management in Future Internet Wireless Networks .....	318
<i>Ioannis P. Chochliouros, Evangelos Sfakianakis, Apostolis Kousaridas, Jens Modeker, David Wagner, Anastasia S. Spiliopoulou, George Agapiou, Andrej Mihailovic, Dev Pramil Audsin, Maria Belesioti, Andreas Rigas, Konstantinos Chelidonis, Evangelos Gazis, Gerard Nguengang, Nancy Alonistioti, Christos Mizikakis, Dimitrios Katsaros, and Tilemachos Doukoglou</i>	
Towards Dynamic Protocol Configuration and its Configuration and Control in Autonomous Communication Environments.....	334
<i>David Wagner and Jens Mödeker</i>	

## **MobiLight 2010 – Special Session on “Distributed Wireless Networking Experimental Infrastructure for Optimization and Convergence (ICARUS)”**

Dynamic Call Admission Control for Enhanced GoS of UGS Connections during “Busy Hour” in WiMAX .....	346
<i>Angelos Antonopoulos and Christos Verikoukis</i>	
Mutual Information Effective SNR Mapping Algorithm for Fast Link Adaptation Model in 802.16e .....	356
<i>Fernando López Aguilar, Gorka Rubio Cidre, José Manuel López López, and Javier Regidor Paris</i>	
Virtual Distributed Simulation Platform for the Study and Optimization of Future Beyond 3G Heterogeneous Systems .....	368
<i>M<sup>a</sup> Carmen Lucas-Estañ, Salva Garrigas, Javier Gozálvéz, Jose Monserrat, Julen Maneros, Fernando López, Ainara González, Imanol Aguado, and Pedro Chaparro</i>	
A Dual Head Clustering Mechanism for Energy Efficient WSNs .....	380
<i>Muhammad Alam and Jonathan Rodriguez</i>	
Measuring the Closed-Loop Throughput of 2x2 HSDPA over TX Power and TX Antenna Spacing .....	388
<i>Sebastian Caban, José A. García-Naya, Christian Mehlführer, Luis Castedo, and Markus Rupp</i>	

## **MobiLight 2010 – Special Session on “Critical Information Infrastructure Protection: Where We Stand and Where We Are Heading To (CIIP)”**

Towards Benchmarking of P2P Technologies from a SCADA Systems Protection Perspective .....	400
<i>Abdelmajid Khelil, Sebastian Jeckel, Daniel Germanus, and Neeraj Suri</i>	
Improving Wireless Sensor Network Resilience with the INTERSECTION Framework .....	415
<i>Gareth Tyson, Adam T. Lindsay, Steven Simpson, and David Hutchison</i>	
Trust Management in Monitoring Financial Critical Information Infrastructures .....	427
<i>Giorgia Lodi, Roberto Baldoni, Hisain Elshaafi, Barry P. Mulcahy, György Csértán, and László Gönczy</i>	
Using MPLS in a Wireless Mesh Network to Improve the Resiliency of SCADA Systems .....	440
<i>Stefano Avallone and Salvatore D’Antonio</i>	

Fusion of Bayesian and Ontology Approach Applied to Decision Support System for Critical Infrastructures Protection .....	451
<i>Rafał Kozik, Michał Choraś, and Witold Hotubowicz</i>	

## **MobiLight 2010 – Special Session on “Advanced Wireless Technologies for a Converged Ultra-Broadband Home Network (OMEGA)”**

OMEGA: New Use Cases for Future Home Networks .....	464
<i>Jean-Philippe Javaudin, Martial Bellec, Gilles Goni, and Rafael Gonzalez Fuentetaja</i>	
Adaptive Filter Bank Modulation for Next Generation Wireless In-Home Networks .....	472
<i>Salvatore D’Alessandro and Andrea M. Tonello</i>	
Challenges in Gbps Wireless Optical Transmission .....	484
<i>Mike Wolf, Jianhui Li, Liane Grobe, Dominic O’Brien, Hoa Le Minh, and Olivier Bouchet</i>	
An Efficient Power Control Algorithm for Supporting Cognitive Communications in Shared Spectrum Areas .....	496
<i>Mahdi Pirmoradian, Christos Politis, and Emmanouil A. Panaousis</i>	

## **MobiLight 2010 – Special Sessions on “Advances on Indoor Positioning and Multiuser Scheduling (NEWCOM++)” and “Relay-Based Next Generation Wireless Broadband Networks and Associated Components (REWIND)”**

TOA Estimation in UWB: Comparison between Time and Frequency Domain Processing .....	506
<i>Eva Lagunas, Lorenzo Taponecco, Montse Nájjar, and Antonio D’Amico</i>	
Trade-off between Feedback Load for the Channel State Information and System Performance in MIMO Communications .....	518
<i>Daniel Sacristán-Murga and Antonio Pascual-Iserte</i>	
Evolution of Spatial and Multicarrier Scheduling: Towards Multi-cell Scenario .....	530
<i>Pol Henarejos, Ana Perez-Neira, Velio Tralli, Marco Moretti, Nikos Dimitriou, and Giulio Dainelli</i>	
Multi-hop Relay in Next Generation Wireless Broadband Access Networks: An Overview .....	543
<i>Nikos Athanasopoulos, Panagiotis Tsiakas, Konstantinos Voudouris, Iraklis Georgas, and George Agapiou</i>	

## **EUMOBILE 2010 – 1st European Symposium on “Mobility Management”**

An Experimental MIH Platform for Testing Video Streaming Services across Heterogeneous Radio Access Technology Networks .....	555
<i>Lampros Downis, Michail Tsagaropoulos, Ilias Politis, and Tasos Dagiuklas</i>	
A Lightweight Macro-Mobility Framework .....	567
<i>Karel De Vogeleer, David Erman, Markus Fiedler, and Adrian Popescu</i>	
Enhanced Localization in Wireless Ad Hoc Networks through Cooperation .....	579
<i>Senka Hadzic, Joaquim Bastos, and Jonathan Rodriguez</i>	
Increasing the VoIP Capacity through MAP Overhead Reduction in the IEEE 802.16 OFDMA Systems .....	590
<i>Vitaliy Tykhomyrov</i>	
Multi-radio Cooperative ARQ in Wireless Cellular Networks: A MAC Layer Perspective .....	604
<i>J. Alonso-Zárate, E. Kartsakli, L. Alonso, M. Katz, and Ch. Verikoukis</i>	

## **PHYLOM 2010 – Workshop on “Advanced PHYsical Layer Optimization Methods for Energy-Efficient Wireless Systems”**

Joint Turbo Coding and Source-Controlled Modulation of Cycle-Stationary Sources in the Bandwidth-Limited Regime .....	618
<i>Idoia Ochoa, Pedro M. Crespo, Javier Del Ser, and Mikel Hernaez</i>	
Harmony Search Heuristics for Quasi-asynchronous CDMA Detection with M-PAM Signalling .....	626
<i>S. Gil-Lopez, J. Del Ser, and L. Garcia-Padrones</i>	
Cross-Layer Clustering Optimization in Mobile Networks Using Evolutionary Algorithms .....	638
<i>L. Carro-Calvo, S. Maldonado-Bascon, A. Portilla-Figueras, S. Lafuente-Arroyo, and S. Salcedo-Sanz</i>	
A Case Study of Parameter Control in a Genetic Algorithm: Computer Network Performance .....	650
<i>J.A. Fernández-Prieto, J. Canada-Bago, M.A. Gadeo-Martos, and Juan R. Velasco</i>	

On the Application of a Novel Grouping Harmony Search Algorithm to the Switch Location Problem . . . . .	662
<i>Sergio Gil-Lopez, Javier Del Ser, Itziar Landa, Laura Garcia-Padrones, Sancho Salcedo-Sanz, and Jose A. Portilla-Figueras</i>	
Adaptive Weighted Round Robin (AWRR) Scheduling for Optimization of the Wireless Medium Virtualisation . . . . .	673
<i>Gorka Hernando, Susana Pérez, and José María Cabero</i>	
Robust Wireless Network Coding – An Overview . . . . .	685
<i>Marco Di Renzo, Lana Iwaza, Michel Kieffer, Pierre Duhamel, and Khaldoun Al Agha</i>	
<b>UAS 2010 – Workshop on “User Adaptive Systems for Mobile Wireless Systems”</b>	
Localization in Real GSM Network with Fingerprinting Utilization . . . . .	699
<i>Jozef Benikovsky, Peter Brida, and Juraj Machaj</i>	
Customized Contents Service Over a DVB-SH/3G Network . . . . .	710
<i>Azza Jedidi and Frédéric Weis</i>	
Measurement and Visualization of ECG on Mobile Monitoring Stations of Biotelemetric User Adaptive System . . . . .	722
<i>Dalibor Janckulik, Leona Motalova, and Ondrej Krejcar</i>	
Complex Mobile User Adaptive System Framework for Mobile Wireless Devices . . . . .	739
<i>Ondrej Krejcar</i>	
The Indoor Orientation of Autonomous Mobile Devices for Increasing Human Perspective . . . . .	755
<i>Jiri Kotzian, Jaromir Konecny, Ondrej Krejcar, Tomas Lippa, Hynek Prokop, and Marian Kuruc</i>	
Architecture and Design of Mobile Telemetry System for Ambient Assisted Living . . . . .	769
<i>Martin Stankus, Marek Penhaker, Jan Kijonka, Petr Grygarek, and Jiri Kotzian</i>	
<b>Author Index . . . . .</b>	<b>781</b>