2014 IEEE 10th International Conference on Wireless and Mobile Computing, Networking and Communications

(WiMob 2014)

Larnaca, Cyprus
8-10 October 2014
CNBuB1: The 3rd International Workshop on Community Networks and Bottom-up-Broadband

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SCUCA1: The 2nd IEEE WiMob 2014 International Workshop on Smart City and Ubiquitous Computing Applications (SCUCA 2014)

The Web of Things: towards smart pervasive environments

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**An Architecture supporting Knowledge flow in Social Internet of Things systems**
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eHPWAS: e-Health Pervasive Wireless Applications and Services (eHPWAS'14)

A New Web-based E-health platform
Noura Baccar (University of Tunis Elmanar & Cynapsys, Tunisia); Ridha R. Bouallegue, B. (Ecole Supérieure des Communications de Tunis, Tunisia)
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GRASP for the Vehicle Routing Problem with Time Windows, synchronization and precedence constraints
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Continuous wearable health monitoring using novel PPG optical sensor and device
Armen Poghosyan (Sensogram Technologies Inc. & Institute for Physical Research, Armenia); Vahram Mouradian (Sensogram Technologies inc., USA); Levon Hovhannisyan (Sensogram Technologies Ltd., Armenia)
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iHealth:A Fuzzy approach for provisioning Intelligent Health-care system in Smart City
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EN4PPDR3: The IEEE WiMob 2014 Workshop on Emergency Networks for Public Protection and Disaster Relief

Design and Deployment of a Wireless Sensor Network for Landslide Risk Management
Andrea Giorgetti and Matteo Lucchi (University of Bologna, Italy); Emanuele Tavelli (Winet, Italy); Marco Chiani and Davide Dardari (University of Bologna, Italy)
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Sensor data collection experiments with Chaoster in the Fed4FIRE federated testbeds
Balazs Pataki and Laszlo Kovacs (MTA SZTAKI, Institute for Computer Science and Control of the Hungarian Academy of Sciences, Hungary)
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Environmental EMF Monitoring in the SEMONT System Using Quad-band AMB 8057/03 Sensor
Danka Antic (University of Novi Sad & Faculty of Technical Sciences, Novi Sad, Serbia); Nikola Djuric and Dragan Kljajic (Faculty of Technical Sciences, University of Novi Sad, Serbia)
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**DSoNets: The First IEEE WiMob 2014 Workshop On Dynamic Social Networks**

**SONIC: Towards Seamless Interaction in Heterogeneous Distributed OSN Ecosystems**
Sebastian Göndör (Telekom Innovation Laboratories / TU Berlin, Germany); Hussam Hebbo (TU Berlin, Germany)
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**Exploiting Social Preferences for Congestion Control in Opportunistic Networks**
Dimitrios-Georgios Akestoridis, Nikolaos Papanikos and Evangelos Papapetrou (University of Ioannina, Greece)
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**EN4PPDR4: The IEEE WiMob 2014 Workshop on Emergency Networks for Public Protection and Disaster Relief**

**Business models and multi-domain analysis for acquiring broadband PPDR systems**
Piotr Tyczka (ITTI Ltd., Poland); Henryk Gierszal (Adam Mickiewicz University, Poland); Krzysztof Romanowski (ITTI, Poland); Damien Lavaux (Thales Communications, France); Christos Katsigiannis (EXUS S.A., Greece); Karina Pawlina (ITTI Ltd., Poland)
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**A Novel Method of Determining EWS Wake-up Trigger for ISDB-T Digital Television Receivers**
Satoshi Takahashi (Hiroshima City University, Japan)
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**A Real World Evaluation of Push to Talk Service Over IMS and LTE for Public Safety Systems**
Alhad Kuwadekar (University of South Wales, United Kingdom)
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**GROWN-1: GReen Optimized Wireless Networks Workhsop -1**

**Energy Efficient RRM Strategies for Current and Upcoming TeTRA Cellular Systems**
Enrico Del Re (University of Florence, Italy); Simone Morosi and Pierpaolo Piunti (University of Florence - CNIT, Italy); Giacomo Mazzi and Ottavio Gremigni (University of Florence, Italy)
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**An Ultra Low Power High Sensitivity Wake-Up Radio Receiver with Addressing Capability**
Michele Magno (ETH Zurich and University of Bologna, Switzerland); Luca Benini (University of Bologna, Italy)
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**Cooperative Beamforming in Ad-Hoc Networks with Sublinear Transmission Power**
Thomas Janson (University of Freiburg, Germany); Christian Schindelhauer (University of Freiburg & Rechnernetze und Telematik an der Albert-Ludwigs-Universität Freiburg, Germany)
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**RAWMAC: A Routing Aware Wave-based MAC Protocol for WSNs**
Pietro Gonizzi (University of Parma, Italy); Paolo Medagliani (Thales Communications and Security, France); Gianluigi Ferrari (University of Parma, Italy); Jeremie Leguay (Thales Communications & Security, France)
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**Keynote1: Keynote Talk 1: Three Decades of Ubiquitous Computing Development: Opportunities and New Challenges**

Mark Weiser predicted a connected and ubiquitous world in his visionary paper in the late 1980s. It has taken that vision over 30 years to be truly put in practice. Much of this deployment is due to the advance in wireless technology. This talk will review some
of the opportunities of today’s ubiquity and the unexpected challenges that it has thrown out. In particular, the talk will relate these issues to the examples of important developments such as of digital life memories or life logging and their applications, mobile cloud technology, and the effect of smart services such as smart cities on privacy and security.

**ST1: Sixth International Workshop on Selected Topics in Mobile and Wireless Computing**

**Physical PH1**

- **Analysis evaluation of collision detection scheme utilizing MIMO transmission**
  Yoshiaki Morino, Takefumi Hiraguri, Toshiyuki Ogawa and Hideaki Yoshino (Nippon Institute of Technology, Japan); Kentaro Nishimori (Nihgata University, Japan)
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- **Towards Understanding Interruption and Reordering in HSPA/HSPA+ Networks**
  Lennart Schulte, Gautam Raj Moktan, Mikko Särelä and Jukka M J Manner (Aalto University, Finland)
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- **On Using Relays with Carrier Aggregation for Planning 5G Networks Supporting M2M Traffic**
  Elias Yaacoub (Qatar Mobility Innovations Center (QMIC), Qatar); Zaher Dawy (American University of Beirut, Lebanon)
  pp. 124-129

- **Analytic Performance Evaluation of M-QAM Based Decode-and-Forward Relay Networks Over Enriched Multipath Fading Channels**
  Mulugeta K Fikadu (Tampere University of Technology, Finland); Paschalis C. Sofotasios (Tampere University of Technology & Aristotle University of Thessaloniki, Finland); Mikko Valkama (Tampere University of Technology, Finland); Qimei Cui (Beijing University of Posts and Telecommunications, P.R. China)
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**UB1: Ubiquitous Computing, Services and Applications**

- **A Novel Application Model and an Offloading Mechanism for Efficient Mobile Computing**
  Jose Andres Gonzalez Barrameda and Nancy Samaan (University of Ottawa, Canada)
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- **Context-Aware Adaptive Recommendation of Resources for Mobile Users in a University Campus**
  Guilherme Medeiros Machado and José Palazzo (Federal University of Rio Grande do Sul, Brazil)
  pp. 427-433

- **K-Means Based Clustering Approach for Data Aggregation in Periodic Sensor Networks**
  Hassan Harb (Lebanese University, Lebanon); Abdallah Makhoul (University of Franche-Comté, France); David Laiymani (LIFC, France); Ali Jaber (Lebanese University, Lebanon); Rami Tawil (LIU University, Lebanon)
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- **Activity Recognition from Sensors using Dyadic Wavelets and Hidden Markov Model**
  Roland Assam (RWTH Aachen University, Germany); Thomas Seidl (RWTH Aachen University, Germany)
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**WI1: Wireless Communications**

- **Investigation of Capacity Loss and Mean Effective Gain in Multiple Antenna Systems**
  Belgacem Aouadi (SUP’COM, Tunisia); Jamel Belhadj Tahar (Sup’Com, Tunisia)
  pp. 449-454
Adaptive Bit and Power Allocation Algorithm for SVD-MIMO System with Fixed Transmission Rate
Kazuhiko Mitsuyama (Japan Broadcasting Corporation, Japan); Naohiko Iai (Japan Broadcasting Corporation (NHK), Japan)
pp. 455-460

Physical Layer Secrecy for MISO Channel with Quantized Feedback
Ioannis Krikidis and Constantinos Psomas (University of Cyprus, Cyprus)
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Performance Analysis of Full-duplex MIMO-SVD-SIC based Relay in the Presence of Channel Estimation Errors
Mohamad A. Ahmed (Newcastle University /UK & University of Mosul / IRAQ, United Kingdom); Charalampos C. Tsimenidis and Stephane Le Goff (Newcastle University, United Kingdom)
pp. 467-472

**WM1: Wireless Networking, Mobility and Nomadicity**

Opportunistic Networks: Minimizing Expected Latency
Shohreh Shaghaghian and Mark Coates (McGill University, Canada)
pp. 473-478

Social Networks for Certification in Vehicular Disruption Tolerant Networks
Thiago R. Oliveira (UFSJ, Brazil); Sergio de Oliveira (Federal University of Sao Joao Del Rey, Brazil); Daniel Fernandes Macedo and Jose-Marcos Nogueira (Federal University of Minas Gerais, Brazil)
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PADAVAN: Privacy-Aware Data Accumulation for Vehicular Ad-hoc Networks
Andreas Tomandl, Dominik Herrmann and Hannes Federrath (University of Hamburg, Germany)
pp. 487-493

Predicting Journeys for DTN Routing in a Public Transportation System
Fabio R Segundo (Universidade Federal de Santa Catarina & Universidade Regional de Blumenau, Brazil); Eraldo Silveira e Silva (UFSC UniversityFed Santa Catarina, Brazil); Jean-Marie Farines (Universidade Federal de SC, Brazil)
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**ST2: Sixth International Workshop on Selected Topics in Mobile and Wireless Computing**

Sensor Networks

This is How We Roll: Cultural Traits in Check-in Behaviour
Andreas Komninos (University of Starchlyde, United Kingdom); Jeries Besharat and John Garofalakis (University of Patras, Greece); Dimitrios Michelakis (University of Edinburgh, United Kingdom)
pp. 225-230

Energy Preservation in Large-Scale Wireless Sensor Network Utilizing Distributed Compressive Sensing
Nayera Youness (German University in Cairo, Egypt); Khaled Hassan (German University in Cairo (GUC), Egypt)
pp. 251-256

Towards Accurate Mobility and Radio Link Modeling for IEEE 802.15.6 Wearable Body Sensor Networks
Muhammad Mahtab Alam (Qatar Mobility Innovation Center, Qatar); Elyes Ben Hamida (Qatar Mobility Innovations Center (QMIC), Qatar)
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ST3: Sixth International Workshop on Selected Topics in Mobile and Wireless Computing

Social Networks and Mobile Applications

**Non-verbal Audio and Tactile Mobile Navigation**
Andreas Komninos (University of Strathclyde, United Kingdom); Marianna Astrantzi (University of West Macedonia, Greece); Athanasios Plessas, Vassilios Stefanis and John Garofalakis (University of Patras, Greece)
pp. 314-321

**Routing in Wireless Sensor Networks: An approach using Stackelberg Games**
Eirini Karapistoli and Anastasios A. Economides (University of Macedonia, Greece)
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**Smooth Writing Card for a Messaging App**
Vivencio Fuentes, Jr. (University of the Philippines Diliman, Philippines); Rowel O Atienza (University of the Philippines, Philippines)
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**Investigating the Android Intents and Permissions for Malware Detection**
Fauzia Idrees (City University London & NUST, United Kingdom)
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WI2: Wireless Communications

**SINR Analysis of Cognitive Underlay Systems with Multiple Primary Transceivers in Nakagami-m Fading**
Petros S. Bithas (Institute for Astronomy, Astrophysics, Space Applications and Remote Sensing, Greece); Athanasios A. Rontogiannis (National Observatory of Athens, Greece); Kostas Berberidis (University of Patras, Greece)
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**An Adaptive Transmission scheme for multiuser MIMO Broadcast Channel in Cognitive Radio**
Chung Le (Wilhelm Leibniz University Hannover, Institute of Communications Technology, Germany); Sanam Moghaddamnia (Leibniz University of Hannover, Germany); Jürgen Peissig (Leibniz Universität Hannover, Germany)
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**Software Defined Framework for Multi-Cell Cognitive Radio Networks**
Ahmad S Doulat, Ahmad Al Abed Al Aziz, Mahmoud Al-Ayyoub and Yaser Jararweh (Jordan University of Science and Technology, Jordan); Haythem A. Bany Salameh (Yarmouk University, Jordan); Abdallah A Khreishah (New Jersey Institute of Technology, USA)
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WM2: Wireless Networking, Mobility and Nomadicity

**Short-Term Link Quality Estimation for Opportunistic and Mobility Aware Routing in Wearable Body Sensors Networks**
Elyes Ben Hamida (Qatar Mobility Innovations Center (QMIC), Qatar); Muhammad Mahtab Alam (Qatar Mobility Innovation Center, Qatar); Mickael Maman (CEA-Leti Minatec Campus, France); Benoît Denis (CEA-Leti Minatec, France)
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**Expected Delay for Topology Construction and Reconfiguration in Harvested 802.15.4 Networks**
Gabriele Romaniello (University of Grenoble & STMicroelectronics, France); Olivier Alphand and Andrzej Duda (Grenoble Institute of Technology, France); Roberto Guizzetti (STMicroelectronics, France)
p. 527-533

**Routing Protocol-Independent Contact Optimization for Opportunistic Social Networks**
Chen Yang and Radu Stoleru (Texas A&M University, USA)
ST4: Sixth International Workshop on Selected Topics in Mobile and Wireless Computing

QoS

Predicting mobile video inter-download times with Hidden Markov Models
Frederic Beister and Holger Karl (University of Paderborn, Germany)
pp. 359-364

QoS Concept for IEEE 802.16-2012 Based WiMAX Networks
Volker Richter, Rico Radeke and Ralf J. Lehnert (Technische Universität Dresden, Germany)
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Robust Energy Harvesting Aware Clustering with Fuzzy Petri Net Reasoning Algorithm
Aya Mostafa (System Engineer, Egypt); Khaled Hassan (German University in Cairo (GUC), Egypt)
pp. 378-383

A Cross-Layer Video Multicasting Routing Protocol for Cognitive Radio Networks
Yaser Mhaidat and Mohammad A. Alsmirat (Jordan University of Science and Technology, Jordan);
Osamah S. Badarneh (University of Tabuk, Saudi Arabia); Yaser Jararweh (Jordan University of Science and Technology, Jordan); Haythem A. Bany Salameh (Yarmouk University, Jordan)
pp. 384-389

ST5: Sixth International Workshop on Selected Topics in Mobile and Wireless Computing

Physical PH1

Cyclostationarity-based spectrum sensing properties for Signals of Opportunity
Md. Lushanur Rahman, Pedro Figueiredo e Silva and Elena Simona Lohan (Tampere University of Technology, Finland)
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On an efficient equalization structure for aeronautical communications via a satellite link
Bilel Raddadi and Nathalie Thomas (University of Toulouse, France); Charly Poulliat (INP - ENSEEIHT Toulouse, France); Marie-Laure Boucheret (University of Toulouse IRIT Enseeiht, France); Benjamin Gadat (Thales Alenia Space, France)
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Prediction of Spectral Regrowth for FBMC-OQAM system using Cumulants
S S Krishna Chaitanya Bulusu (Conservatoire National des Arts et Metiers, France); Hmaied Shaiek (CNAM, France); Daniel Roviras (Cnam, France)
pp. 402-406

WM3: Wireless Networking, Mobility and Nomadicity

Node-Centric Energy Balancing For Wireless Networks
Stojan Denic (Telecommunications Research Lab Toshiba, United Kingdom); Yichao Jin (Toshiba Research Europe Ltd, United Kingdom); Stefanos Vatsikas (Toshiba Research Europe, United Kingdom); Mahesh Sooriyabandara (Toshiba Research Europe Limited, United Kingdom)
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Dynamic and Energy efficient Wireless BAN Platform for Remote Health Monitoring
Karel Heurtefeux and Nasreen Mohsin (Qatar Mobility Innovations Center, Qatar); Elyes Ben Hamida (Qatar Mobility Innovations Center (QMIC), Qatar); Hamid Menouar (Qatar Mobility Innovations Center, Qatar)
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An Energy Balanced Dynamic Topology Control Algorithm for Improved Network Lifetime
Xiaoyu Chu and Harish Sethu (Drexel University, USA)
pp. 556-561
**Achieving High Throughput and Low Delay by Accurately Regulating Link Queue Length over Mobile Data Network**  
Ke Liu (Chinese Academy of Sciences & Institute of Computing Technology, P.R. China); Jack Y. B. Lee (The Chinese University of Hong Kong, Hong Kong)  
pp. 562-569

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**Keynote2: Keynote Talk 2: 5G Networks in H2020: SDN-based communication and Network Function Virtualization**

Softwareization of networks is a target set by Telecom operators and Cloud service providers for the near future. The challenge is to guarantee carrier grade performance to virtualized network elements hosted on top of SDN-based cloud computing infrastructures. Network manufacturers are robustly investing on virtualization and cloud, but it is still necessary to put an effort on cloud interoperability and federation, possibly involving standardization.

This challenge calls for a redesign of services paradigms and system, and a re-thinking of architectures, interfaces, functions, access and non-access protocols and related procedures, and advanced algorithms, e.g. for identity management, establishment, maintenance and reconfiguration of ICT services and any type resource among SDN-based cloud infrastructures. A large exploitation and adoption of cloud computing, software networks and network functions and services virtualization will make the 5G infrastructure feasible and business viable.

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**UB2: Ubiquitous Computing, Services and Applications**

- **A Cyber-Physical System for Continuous Monitoring of Water Distribution Systems**  
  Mahima Suresh (Texas A&M University, USA); Usha Manohar and Anjana Gr (Indian Institute of Science, India); Radu Stoleru (Texas A&M University, USA); Mohan Kumar M S (Indian Institute of Science, India)  
  pp. 570-577

- **Up and Away: A Visually-Controlled Easy-to-Deploy Wireless UAV Cyber-Physical Testbed**  
  Ahmed M Saeed (Georgia Institute of Technology & Carnegie Mellon University Qatar, USA); Azin Neishaboori (Qatar University & Pennsylvania State University, USA); Amr Mohamed (Qatar University & Qatar University Wireless Innovations Center, Qatar); Khaled A. Harras (Carnegie Mellon University, USA)  
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- **Local Emergency Detection Approach for Saving Energy in Wireless Body Sensor Networks**  
  Sabrina ElGhers (Houari Boumedien Sciences University, Algeria); Abdallah Makhoul (University of Franche-Comté, France); David Laiymani (LIFC, France)  
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- **Robust Wi-Fi based Indoor Positioning with Ensemble Learning**  
  Daisuke Taniuchi and Takuya Maekawa (Osaka University, Japan)  
  pp. 592-597

- **Differentiating Emergency Voice Traffic in Indoor Wireless Activity Monitoring Network**  
  Alper K. Demir (Kocaeli University, Turkey); Okan Turkes (University of Twente, The Netherlands); Sebnem Baydere (Yeditepe University, Turkey)  
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**WI3: Wireless Communications**

- **Performance comparison of CP-OFDM and OQAM-OFDM systems based on LTE parameters**  
  Martin Fuhrwerk and Jürgen Peissig (Leibniz Universität Hannover, Germany); Malte Schellmann (Huawei Technologies Duesseldorf GmbH, Germany)  
  pp. 604-610

- **Non-data-aided SNR Estimation for QPSK Modulation in AWGN Channel**  
  Tara Salman (Qatar University, Qatar); Ahmed Badawy (Politecnico di Torino, Italy); Tarek M. Elfouly and Tamer Khattab (Qatar University, Qatar); Amr Mohamed (Qatar University & Qatar University Wireless Innovations Center, Qatar)
**System Analysis of Relaying with Modulation Diversity**  
Amir Forghani (Ecole de Technologie Superieure, Canada); Georges Kaddoum (ETS Engineering School, University of Quebec, Canada); Yogesh Nijsure and Francois Gagnon (Ecole de Technologie Superieure, Canada)  
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**Fair Resource Allocation in Multiuser OFDMA Downlink with Passive Eavesdropping**  
Sotiris Karachontzitis (University of Patras, Greece); Stelios Timotheou and Ioannis Krikidis (University of Cyprus, Cyprus); Kostas Berberidis (University of Patras, Greece)  
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### WM4: Wireless Networking, Mobility and Nomadicity

**Multiband CSMA/CA with RTS-CTS Strategy**  
Baher Mawlawi (CEA - LETI, France); Jean-Baptiste Doré (CEA, France); Nikolai Lebedev (CPE Lyon / CITI Laboratory, University of Lyon, France); Jean-Marie Gorce (INSA-Lyon, France)  
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**Resource-Constrained Medium Access Control Protocol for Wearable Devices**  
Lorenzo Bergamini (DIS Sapienza Universita’ di Roma, Italy); Giorgio Corbellini (Disney Research Zurich, Switzerland); Stefan Mangold (Disney Research, Switzerland)  
pp. 634-641

**A Channel Selection Strategy for WLAN in Urban Areas by Regression Analysis**  
Shugo Kajita, Hirozumi Yamaguchi and Teruo Higashino (Osaka University, Japan); Shigeki Umehara, Fumiya Saitou, Hirofumi Urayama and Masaya Yamada (Sumitomo Electric Industries, LTD., Japan); Taka Maeno (Space-Time Engineering Japan, Inc., Japan); Shigeru Kaneda (Space-Time Engineering, LLC., USA); Mineo Takai (University of California, Los Angeles & Osaka University, USA)  
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