

SoftCOM 2009 - CONTENTS

TECHNICAL PROGRAM CHAIRS MESSAGE	2
<i>SoftCOM 2009</i> COMMITTEES	3
<i>SoftCOM 2009</i> FINAL PROGRAM OUTLINE	4
KEYNOTE & INVITED SPEAKERS	5
TECHNICAL PROGRAM: SYMPOSIUMS & SPECIAL SESSION	8
<i>SYMPOSIUM ON ENVIRONMENTAL ELECTROMAGNETIC COMPATIBILITY</i>	8
<i>SPECIAL SESSION ON RFID TECHNOLOGIES</i>	
<i>AND THE INTERNET OF THINGS</i>	8
<i>SPECIAL SESSION ON MOBILE WIRELESS NETWORKS</i>	9
<i>SPECIAL SESSION ON QOS IN WIRED AND WIRELESS NETWORKS</i>	9
<i>SPECIAL SESSION ON ON AD HOC AND SENSOR NETWORKS</i>	9
TECHNICAL PROGRAM: <i>GENERAL CONFERENCE</i>	10
TIMETABLE A: TECHNICAL PROGRAM, WORKSHOPS	12
TIMETABLE B: TUTORIALS, BUSINESS FORUM	13
WORKSHOP ON ICT	14
TUTORIALS	16
WORKSHOP ON EDUCATION IN ICT	18
SECTION ON RESEARCH TOPICS OF PHD STUDENTS IN ENGINEERING	19
BUSINESS FORUM	19
ELECTROMAGNETIC FIELD EFFECTS DEMONSTRATIONS	22
GENERAL INFORMATION	23

TECHNICAL PROGRAM CHAIRS MESSAGE

Foreword

The 17th International Conference on Software, Telecommunications and Computer Networks (SoftCOM 2009) will be held in attractive ambience of the Amfora hotel September 24 & 25, and aboard the ship "Marko Polo", September 26, visiting Split and Korčula. The Conference is organized by the University of Split, Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture under the auspices of the Ministry of Science, Education and Sports with the principal patron e-Croatia. The Conference is technically co-sponsored by the IEEE Communications Society (ComSoc).

Researchers and experts from industry, research institutes and universities from 30 countries all around the world have submitted in total 193 papers for presentation SoftCOM'09. Submitted papers have been reviewed by more than 200 scientists from universities, institutes and ICT companies all over the world. All accepted papers have been carefully selected based on their contribution, relevance, conceptual clearness and overall quality. Nearly 40% of submitted papers have been recommended for presentation within the technical program.

The conference program features four special sessions, nine general conference sessions and a professional workshop dedicated to the wide spectra of topics in ICT. Besides that, the conference program features a symposium dedicated to the most actual topics in the area of mobile and wireless communications. In addition three half day tutorials will be held by worldwide recognized experts.

In conjunction with the SoftCOM'09 conference a Business Forum has been organized featuring workshops, invited talks, round tables, presentations with participation of managers, executives, experts, government and institution representatives who will discuss and exchange opinions and experiences on a number of hot topics in contemporary and future ICT industry and market including business, technological and social aspects.

On behalf of the Program committee we would like to thank and credit the authors for their excellent contributions. Particular thanks to the reviewers for their great job as well as to the IEEE Communications Society (ComSoc) Technical Committee of Communication Software for the support. The fruitful collaboration with the universities from Ancona, Lecce, Colmar, Beira, Zagreb, and London has contributed to the quality of the Program significantly.

Program Committee Co-chairs

Nikola Rozic, Dinko Begusic

SoftCOM 2009 COMMITTEES

TECHNICAL PROGRAM COMMITTEE

Nikola Rozic, University of Split, Croatia (Co - Chair)

Dinko Begusic, University of Split, Croatia (Co - Chair)

Sergio Benedetto, Politecnico di Torino, Italy

Tony Bogovic, Telecordia Technologies, USA

Antun Caric, HAKOM, Croatia

Mario De Blasi, University of Lecce, Italy

Petre Dini, Cisco Systems, USA

Hrvoje Dujmić, University of Split, Croatia

Alex Gelman, Panasonic Research, USA

Roch Glitho, Ericsson Research, Canada

Francis Grenez, University of Bruxelles, Belgium

Gorazd Kandus, Jozef Stefan Institute, Slovenia

Yumin Lee, Chinese Inst of Elec. Eng, China

Pascal Lorenz, Univ. de Haute Alsace, France

Ignac Lovrek, University of Zagreb, Croatia

Gottfried Luderer, Arizona State University, USA

Andrej Ljolje, AT&T, USA

Hiroshi Masuyama, Tottori University, Japan

Dean Marusic, Ericsson - Nikola Tesla, Croatia

Ivan Mijacika, T-HT, Croatia

Miljenko Mikuc, University of Zagreb, Croatia

Naohisa Ohta, Sony Corporation, Japan

Stan Moyer, Telcordia, USA

Algirdas Pakstas, London Metropolitan University, UK

Nikola Pavesic, University of Ljubljana, Slovenia

Dragan Poljak, University of Split, Croatia

Jari Porras, Lappeenranta University of Technology, Finland

Joel Rodrigues, University of Beira Interior, Portugal

Vesna Roje, University of Split, Croatia

Branko Soucek, Iris, Italy

Krzysztof Wesolowski, University of Poznan, Poland

SoftCOM 2009 General Secretary

Josko Radic, University of Split, softcom@fesb.hr

UNIVERSITY OF SPLIT

**FACULTY OF ELECTRICAL ENGINEERING,
MECHANICAL ENGINEERING AND NAVAL
ARCHITECTURE - FESB SPLIT**

**COMMUNICATIONS AND INFORMATION
SOCIETY, CROATIA (CCIS)**

Under the auspices of:

**MINISTRY OF SCIENCE, EDUCATION AND
SPORTS
REPUBLIC OF CROATIA**

**MINISTRY OF THE SEA, TRANSPORT AND
INFRASTRUCTURE
REPUBLIC OF CROATIA**

**CENTRAL STATE ADMINISTRATIVE OFFICE
FOR E-CROATIA**

Technically co-sponsored by:

**IEEE COMMUNICATIONS SOCIETY
(COMSOC)**

IEEE CONTACT

A. Pakstas, London Metropolitan University, UK, UK
(a.pakstas@ieee.org)

<http://www.fesb.hr/SoftCOM>

SoftCOM 2009 FINAL PROGRAM OUTLINE

Thursday, September 24, 2009 (location: Hvar, *Hotel Amfora*)

08.30 - 12.30 Registration

09.00 - 10.30 Technical program, Workshops, Tutorials

10.30 - 11.00 Coffee break

11.00 - 12.30 Technical program, Symposia, Workshops

Lunch

14.00 - 15.30 Technical program, Symposia, Special Sessions

15.30 - 16.00 Coffee break

16.00 - 17.30 Technical program, Symposia, Special Sessions

17.30 - 18.00 Invited talks

Friday, September 25, 2009 (location: Hvar, *Hotel Amfora*)

08.30 - 13.00 Registration

09.00 - 10.30 Technical program, Symposia, Special Sessions, Tutorials

10.30 - 11.30 Coffee break

11.30 - 13.00 Opening ceremony, Plenary session

Conference luncheon

15.00 - 16.30 Technical program

16.30 - 17.00 Coffee break

17.00 - 18.30 Technical program, Symposia, Workshops

18.45 - 19.15 Invited talks

Saturday, September 26, 2009 (location: ship "Marko Polo")

07.30 Departure from Hvar to Stari Grad

8.15 Departure from Stari Grad to Korčula

09.00 - 10.30 Special Session, Business forum, Presentations

11.15 - Arrival in Korčula

12.00 - 13.00 Guided Tour in Korčula

13.00 Departure to Vela Luka

13.45 Departure to Split from Vela Luka

Awards luncheon at the ship

17.00 - 20.00 Guided Tour and Evening in Split

Roberto Minerva*Telecom Italia, Manager***HOW ADAPTIVE TECHNOLOGIES CAN LEAD TO A USER CENTERED SERVICE PLATFORM**

The future of the Internet is pervasive and dominated by intelligent endpoints. In spite of this, Operators are pursuing a centralized approach for Next Generation Networks and Web actors are pushing the client server approach to such an extent that servers are now "inside" the network if not the network itself. This evolution contradicts the Internet foundations and could lead to paradoxes and an inconsistent infrastructure. The Future Internet has to be simple, economic, open, green and pervasive. It distributes intelligence at the edges and tries to limit the asymmetry between client and servers. Peer to peer and adaptive technologies enable a compelling service platform that exploits capabilities of terminals and leverages connectivity. They are slim means juxtaposed to the increasingly gigantic client-server datacenters. The complexity of the distributed service platform can be managed introducing autonomic functions in participating nodes. Bio-inspired algorithms and game theory mechanisms can support the quasi-optimal self management of the entire "service ecosystem" made out of "network of networks". The speech will present the context for this approach, the current status of the work, some experimental results and future steps to enable a highly distributed and user centered service platform for the Future Internet.

Roberto Minerva, Manager, focal point for Long Term Research within the Future Centre & Technical Communication department of Telecom Italia. He held many responsibilities within Telecom Italia Lab: Network Intelligence, Wireless Architecture and Business Services Area Manager. Roberto has a Master Degree in Computer Science. Since 1987 he has been involved in the development of Service Architectures for Telecom (TINA, OSA/Parlay and SIP), in activities related to IMS, and in the definition of services for the Business market (context-awareness, ambient intelligence and automotive). Currently his research activities focus on highly distributed, pervasive, adaptive and autonomic service platforms and systems.

SYMPOSIUM INVITED SPEAKER

Thursday, September 24
17:30 - 18:00
(GRAND BALLROOM 3)

Friday, September 25
17:00 - 17:30
(GRAND BALLROOM 3)

Andrew L. Drozd*ANDRO Computational Solutions, USA***UTILIZING A NUMERICALLY-BASED MACROMODEL APPROACH TO ANALYZE LARGE, COMPLEX SYSTEMS**

Thursday, September 24, 17:30 - 18:00, GRAND BALLROOM 3

The growing complexity of electronic systems and the resulting increase in susceptibility to electromagnetic (EM) effects, coupled with the over-crowding of the spectrum, dictate a critical need for improved analysis methods for evaluating such systems in realistic operational environments. This presentation examines an approach for bridging system-level EM analyses of complex system configurations through the integration of component-level analysis techniques. These techniques are based on representative 'macromodels' that are numerically and/or empirically derived. A computer-based, system-level simulation approach that derives from component-level analysis techniques is expected to significantly improve the efficiency of ground-based testing and substantially reduce certification time and costs by readily taking into consideration numerous combinations of test parameters and operating modes. This approach can be used to assure EMC between the aircraft and its on-board systems or components in a less numerically-intensive way.

EMC COMPUTER MODELING OF SPECTRUM MANAGEMENT OPTIMIZATION SCHEMES FOR DISTRIBUTED WIRELESS SYSTEMS

Friday, September 25, 17:00 - 17:30, GRAND BALLROOM 3

New spectrum sharing techniques for assuring the EMC of wireless systems have recently been investigated that enable the joint utilization of all orthogonal electromagnetic (EM) transmission resources, including, but not limited to time, frequency, geographic space, modulation/code, and polarization. This multi-dimensional environment is referred to as the Transmission Hyperspace™, a term intended to convey the notion of a multidimensional resource space in which each dimension allows orthogonality amongst users. The challenges faced in the modeling and analyses of large-scale problems are presented in terms of assigning an n-tuple for the purpose of enhancing data throughput amongst a group of intended transceivers. The key aspects of the Transmission Hyperspace™ for EMC and efficient spectrum management are discussed. The approach is anticipated to provide several orders of magnitude improvement in RF resource utilization and aggregate data throughput.

Andrew L. Drozd is President and Chief Research Scientist of ANDRO Computational Solutions, LLC located in Rome, NY. ANDRO's focus has been on the development and application of state-of-the-art computational electromagnetics (CEM) codes, computational frameworks, hybridized numerical solutions, and dynamic spectrum optimization for complex system electromagnetic problems. Mr. Drozd is the immediate Past President of the IEEE EMC Society (2006-2007) and is an IEEE Fellow. He is on the Board of Directors of the IEEE EMC Society. Mr. Drozd is a Member of the IEEE Standards Association Standards Board (SASB) and the Standards Review Committee (RevCom). Additionally, he is the Chair of the IEEE EMC Society Standards Development Committee and is Chair of the P1597 Working Groups for the development of an IEEE Standard for Validation of CEM Computer Modeling and Simulation. His efforts along with those of the Working Groups he chairs have culminated in the first-of-its-kind standard and recommended practice for the validation of CEM techniques and computer codes. Additionally, he is a member of the IEEE EMC Society's Technical Committee TC-9 on Computational Electromagnetics and has been a contributor on

behalf of TC-6 on Spectrum Management and EMC. Mr. Drozd has authored and co-written over 150 technical papers, reports, journal articles and book chapters. Mr. Drozd received a Bachelor of Science Degree in Physics and Mathematics in 1977 from Syracuse University, and a Masters of Science in Electrical Engineering specializing in RF Communications and Signal Processing in 1982 also from Syracuse University.

SYMPOSIUM INVITED SPEAKER	Friday, September 25 9:00-9:30 (GRAND BALLROOM 3)	Friday, September 25 15:00-16:30 (BURA I JUGO)
---------------------------	---	--

Alistair Duffy

De Montfort University, Leicester, UK



STRUCTURED CABLING

Friday, September 25, 9:00 - 9:30, GRAND BALLROOM 3

Our offices, and increasingly our homes, are wrapped in twisted pair cabling. It often does not seem as innovative as optical fibre or wireless solutions, yet the cabling that is ostensibly the same that carried signals of a few tens of kilocycles in the early days of telephony is looking towards handling 40 or even 100 gigabits per second. This lecture is a window on how this, often overlooked, technology works, its history and the challenges for its future.

VALIDATION OF COMPUTATIONAL ELECTROMAGNETICS

Friday, September 25, 15:00 - 16:30, BURA I JUGO

A main problem being addressed here is that, as EMC engineers, we have a sense of when a result is good (or a comparison of results is good) irrespective of how visually complex those results actually are. Quantification is easy when the results have a simple structure using simple distance measures, correlation, etc. This task is not easy when we are faced with graphs with many peaks and troughs and differing mean amplitude levels. Yet we still have a by-eye ability to label the graphs as good or better than the last bunch or not good enough. Over the years, research has focussed on trying to capture this human-centred approach in a simple computer based approach. This lecture looks at the problem, how people actually look at these graphs, how we categorise good or bad, how this can be captured in a computer implementable method and what challenges this now poses.

Dr Alistair Duffy is Reader in Electromagnetics at De Montfort University, Leicester, UK. He read for his BEng(Hons) and MEng degrees in Cardiff (University College, University of Wales) graduating in 1988 and 1989 respectively. During his first degree he was sponsored by Oyster Terminals Ltd and he worked there after graduation for two years (1988-1990). In 1990 he went to work as a research assistant in Nottingham University reading also for a PhD with Professors Christopoulos and Benson, graduating with a PhD in Coupling of electromagnetic waves into wires experiments and simulations. After a years post doctoral study at Nottingham, he moved to Leicester to lecture in communications and researching in related electromagnetic phenomena. He is currently also the Head of the Engineering Division at De Montfort University. He has published approximately 150 technical papers and also holds an MBA. The time spent in a more commercial function in industry still has not left him and he is also interested in technology strategy, particularly forecasting.

Krešo Antonović

Director, Electronic Communications and Postal Service Directorate, Ministry of the Sea, Transport and Infrastructure, Croatia

**ANALOGUE TO DIGITAL TELEVISION BROADCASTING SWITCHOVER STRATEGY IN CROATIA - THE STATUS OF IMPLEMENTATION**

In July 2008, the Government of the Republic of Croatia adopted Analogue to Digital Television Broadcasting Switchover Strategy, which stipulates fundamental strategic guidelines for the introduction of digital television in Croatia. The analogue terrestrial television switch off is scheduled for 1 January 2011. Two Action Plans for the implementation of the Strategy have been presented. MUX A and MUX B coverage has been analysed. The Strategy also enables the introduction and provision of new services or business models, due to the releasing of the radio frequency spectrum for new allocations and applications upon digital switchover - the possibility of using his digital dividend for various communications services and applications is also discussed. The Government project of granting the subsidies to the TV subscribers to facilitate the purchase of digital TV receivers has been presented as a fully technologically neutral concept.

Krešo Antonović is Director of the Electronic Communications and Postal Service Directorate, Ministry of the Sea, Transport and Infrastructure, since August 2008. Before being appointed to this post, Mr. Antonović was working at the Ministry for more than 14 years. He graduated in 1994 at the Zagreb University, Faculty of Electrical Engineering and Computing (FER), in the field of radio communications (multimedia). Mr. Antonović is a member of the Working Groups for the Preparation of Negotiations with EU in Chapter 10 - Information Society and Media and in Chapter 21 - Trans-European Networks. Since 2006, he is an observer in the Communications Committee of the European Commission (COCOM). He served as a Deputy Head and Head of the national delegation at several ITU world and regional radiocommunications conferences and CEPT assemblies. Mr. Antonović is a member of MIPRO and ELMAR societies in Croatia

Dražen Lučić

Croatian Post and Electronic Communications Agency, Croatia

**AN OVERVIEW AND A FORECAST OF ELECTRONIC COMMUNICATIONS MARKET IN REPUBLIC OF CROATIA**

Electronic communication market data in Republic Croatia have been presented, based on public switched telephone networks, mobile telecommunication networks, as well as on radio and television broadcasting. The market development in a new regulatory environment has been forecasted with emphasize on broadband Internet access and on transition to digital television broadcasting. A comparison to the European Union markets has been done.

Dražen Lučić has been the Executive Director of HAKOM since 2009. Before joining HAKOM Mr. Lučić was working at Ericsson in Croatia, Western Europe and Israel for more than twenty years, eventually as Senior Sales Director toward a global telecommunications network operator.

TECHNICAL PROGRAM: SYMPOSIUMS & SPECIAL SESSION

Thursday, September 24

Thursday, September 24, 11:00-12:30, (GRAND BALLROOM 3)

SYM1/I: SYMPOSIUM ON ENVIRONMENTAL ELECTROMAGNETIC COMPATIBILITY I

Symposium organizers: Dragan Poljak, Vesna Roje, University of Split, Croatia

Symposium co-chairs: Dragan Poljak, Vesna Roje, University of Split, Croatia

Boundary Element Modeling of the Human Body when Exposed to Overhead Power Lines: Influence on Conductivity Variations

Cristina Gonzalez, Andres Peratta, *Wessex Institute of Technology, UK*; Dragan Poljak, *University of Split, Croatia*

Human Equivalent Antenna Model for HF Exposures: Analytical versus Numerical Approach

Dragan Poljak, Silvestar Šesnić, Ivana Zulim, *University of Split, Croatia*

Assessment of Human Exposure to High Frequency Electromagnetic Fields Using Simplified Models of Human Body

Ivana Zulim, Dragan Poljak, Antonio Šarolić, *University of Split, Croatia*

SAR Calculations Inside a Heterogeneous Human Heart Model

Alina Buleandra, Teodor Petrescu, *Politehnica University of Bucharest, Romania*

Thursday, September 24, 14:00-15:30, (GRAND BALLROOM 3)

SYM1/II: SYMPOSIUM ON ENVIRONMENTAL ELECTROMAGNETIC COMPATIBILITY II

Symposium organizers: Dragan Poljak, Vesna Roje, University of Split, Croatia

Symposium co-chairs: Dragan Poljak, Vesna Roje, University of Split, Croatia

Numerical approximation of the lightning current function

Slavko Vujević, Dino Lovrić, *University of Split, Croatia*; Zdenko Balaž, *Croatian Motorways Ltd, Croatia*

FEM vs. Modal Method in the MTL Analysis

Rino Lucić, Alen Bernadić, Ivica Jurić-Grgić, Marija Tolj, *University of Split, Croatia*

On the Choice of the Lightning Channel Current Decay Constant in the Modified Transmission Line Model with Exponential Decay

Vesna Javor, Predrag D. Rancic, *University of Niš, Serbia*

The effect of 900 MHz electromagnetic field on protein expression in earthworms (*Eisenia foetida*)

Dubravko Pavoković, Krešimir Malarić, Anamaria Štambuk, Marijana Krsnik-Rasol, Mirta Tkalec, *University of Zagreb, Croatia*

Optimized indirect time-domain analysis of the thin-wire structures

Siniša Antonijević, Dragan Poljak, Joško Radić, *University of Split, Croatia*

Thursday, September 24, 16:00-17:30, (GRAND BALLROOM 3)

SYM1/III: SYMPOSIUM ON ENVIRONMENTAL ELECTROMAGNETIC COMPATIBILITY III

Symposium organizers: Dragan Poljak, Vesna Roje, University of Split, Croatia

Symposium co-chairs: Dragan Poljak, Vesna Roje, University of Split, Croatia

A Review of Methods for Grounding Grid Analysis (INVITED PAPER)

Petar Sarajčev, Slavko Vujević, *University of Split, Croatia*

A Generalization of Fresnel – Arago Interference Laws

Victor Tatarinov, Sergey Tatarinov, *Tomsk State University of Control Systems and Radioelectronics, Russian Federation*

Designing and Testing the Quadrafilar Helical Antenna

Maja Šekelja, Jurica Jurica, Zoran Blažević, *University of Split, Croatia*

RCS Simulation and Comparison of Two Shipboard Cylindrical Trihedral Radar Reflectors in S-band and X-band

Zlatko Živković, Antonio Šarolić, *University of Split, Croatia*

Thursday, September 24, 14:00-15:30, (TERRACE BALLROOM 2)

SS1: SPECIAL SESSION ON RFID TECHNOLOGIES AND THE INTERNET OF THINGS

Special session organizer: Luigi Patrono, University of Lecce, Italy
Chair: Luigi Patrono, University of Lecce, Italy

Automated Analysis of ISO/IEC14443A Interrogator Command Pulse Shapes

Ulrich Muehlmann, Michael Gebhart, *NXP Semiconductors Austria, Austria*

Supply Chain Management Meets Auto-ID Management: A Structured Approach

Ugo Barchetti, Alberto Bucciero, Luca Mainetti, *University of Salento, Italy*

Interacting with the digital world through RFID-powered gadgets

Leire Muguira, Jonathan Ruiz-de-Garibay, Juan Ignacio Vazquez, *DeustoTech, Spain*

Securing ePassport System: A Proposed Anti-Cloning and Anti-Skimming Protocol

Muhammad Qasim Saeed, Ashraf Masood, Firdous Kausar, *National Univ. of Sciences and Technology, Rawalpindi, Pakistan*

ROADS: RFID Office Application for Document tracking over SIP

Petar Šolić, Nikola Rožić, *University of Split, Croatia*; Nenad Ukić, *Ericsson Company, R&D Section, Croatia*

Thursday, September 24, 16:00-17:30, (TERRACE BALLROOM 2)

SS2 – SPECIAL SESSION ON MOBILE WIRELESS NETWORKS

Special session organizer: Mario De Blasi, University of Lecce, Italy

Chair: Luigi Patrono, University of Lecce, Italy

RSSI-based Cross Layer Link Quality Management for Layer 3 Wireless Mesh Networks

Kenichi Mase, *Niigata University, Japan*; Hiraku Okada, *Saitama University, Japan*; Yoshiko Nakano, *Niigata University, Japan*

Peer-to-Peer Distribution On Radio Channel

Danilo Merlanti, Gianluca Mazzini, *University of Ferrara, Italy*

Secure and Efficient IPv4/IPv6 Handovers Using Host-Based Identifier-Locator Split

Samu Varjonen, Miika Komu, Andrei Gurtov, *Helsinki Institute for Information Technology, Finland*

A Generic Model for Advanced Networks Handling Imprecise Information

Gábor Németh, Gábor Árpád Németh, *Budapest University of Technology and Economics, Hungary*

A Trajectory-Aware Vertical Handoff Algorithm

Thazin Ei, Wang Furong, *Huazhong University of Science & Technology, P.R.China*

Design of Multiple Serially Concatenated Multiple Parity-Check Codes for Wireless Applications

Marco Baldi, Giovanni Cancellieri, Franco Chiaraluce, Amedeo De Amicis, *Università Politecnica delle Marche, Italy*

Friday, September 25

Friday, September 25, 09:00-10:30, (GRAND BALLROOM 1)

SS3: SPECIAL SESSION ON QOS IN WIRED AND WIRELESS NETWORKS

Special session organizer: Pascal Lorenz, University of Haute Alsace, Colmar, France

Chair: Joel Rodrigues, University of Beira Interior, Portugal

Preliminary Implementation of Point-to-Multi-Point Multicast

Zsolt Polgar, Zsuzsanna Kiss, Andrei Bogdan Rus, Georgeta Boanea, Melinda Barabas, Virgil Dobrota, *Technical University of Cluj-Napoca, Romania*

A broadband network fault distribution model

Željko Deljac, Robert Moštak, *HT-Croatian telecommunications, Croatia*; Matija Ražem, *HEP ODS d.d., Croatia*

Call Elapsed Time and Reduction in Code Blocking for WCDMA Networks

Vipin Balyan, Davinder S. Saini, *Jaypee University of Information Technology, India*

A fair multi code OVFS design for 3G and beyond wireless networks

Davinder S. Saini, Vipin Balyan, Saurab Kanwar, Pulkit Parikh, Uttam Kumar, *Jaypee University of Information Technology, India*

Mathematical Remarks on Token Bucket

Benedek Kovács, *Budapest University of Technology and Economics, Hungary*

Optimal Switching for Smart and Robust JPEG 2000 Images and Video Transmission over Wireless Networks

Max Agueh, Laurent George, *Ecole Centrale d'Electronique - LACSC, France*

Friday, September 25, 09:00-10:30, (GRAND BALLROOM 3)

SYM1/IV: SYMPOSIUM ON ENVIRONMENTAL ELECTROMAGNETIC COMPATIBILITY IV

Symposium organizers: Dragan Poljak, Vesna Roje, University of Split, Croatia

Symposium co-chairs: Dragan Poljak, Vesna Roje, University of Split, Croatia

Simulation of a Shipboard VHF Antenna Radiation Pattern Using a Complete Sailboat Model

Damir Senić, Antonio Šarolić, *University of Split, Croatia*

Friday, September 25, 17:00-18:30, (GRAND BALLROOM 3)

SYM1/V: SYMPOSIUM ON ENVIRONMENTAL ELECTROMAGNETIC COMPATIBILITY V

Symposium organizers: Dragan Poljak, Vesna Roje, University of Split, Croatia

Symposium co-chairs: Dragan Poljak, Vesna Roje, University of Split, Croatia

Understanding Electromagnetic Effects using Printed Circuit Board Demos (INVITED PAPER)

Frits Buesink, Frank Leferink, *University of Twente, The Netherlands*

Saturday, September 26

Saturday, September 26, 09:00-10:30, (BRAČ)

SS4: SPECIAL SESSION ON ON AD HOC AND SENSOR NETWORKS

Symposium organizer: Joel Rodrigues, University of Beira Interior, Portugal

Chair: Joel Rodrigues, University of Beira Interior, Portugal

Improving efficiency of information sources in wireless ad hoc networks with the push – pull hybrid model

Minh Tri Tran, Vilmos Simon, *Budapest University of Technology and Economics, Hungary*

IP Links in Multihop Ad Hoc Wireless Networks?

Emmanuel Baccelli, *INRIA Saclay, France*; Thomas Clausen, *Ecole Polytechnique, France*; Charles Perkins, *Wichorus*

Reliable and Energy Aware Routing Protocols for Wireless Sensor Networks

Gergely Treplan, *Peter Pazmany Catholic University, Hungary*; Long Tran-Thanh, *Budapest University of Technology and Economics, Hungary*; Andras Olah, Janos Levendovszky, *Peter Pazmany Catholic University, Hungary*

TECHNICAL PROGRAM: GENERAL CONFERENCE

Thursday, September 24

Thursday, September 24, 9:00-10:30, (GRAND BALLROOM 1)

S1 - MOBILE AND WIRELESS COMMUNICATIONS I

Chair: Shigeru Kashihara, Nara Institute of Science and Technology, Japan

Equation Based Rate Control and Multiple Connections for Adaptive Video Streaming over Cellular Networks

Abdolkarim Mardanian Dehkordi, Vahid Tabataba Vakili, Iran University of Science and Technology, Iran

Interference Control in Time-windowed OFDM Systems with Realistic Power Amplifiers for Cognitive Radio Applications

Antonio Cipriano, Jonathan Gasnier, Thales, France; Tomaso Erseghe, University of Padova, Italy

A WLAN-Based Location System for Indoor Parking Areas

Mauro Di Mauro, Giovanni Della Corte, Anton Luca Robustelli, Laboratorio Co.Ri.TeL, Italy; Paolo Addresso, Maurizio Longo, Università degli studi di Salerno, Italy

Thursday, September 24, 09:00-10:30, (GRAND BALLROOM 3)

S2: COMMUNICATION THEORY

Chair: Gottfried W.R. Luderer, Arizona State University, USA

Study of the Distance Spectrum of Chaos-Coded Modulation

Naim Khodor, Jean-pierre Cances, Vahid Meghdadi, Raymond Quere, University of Limoges, France

On the Performance of Orthogonal Polyphase Sequences in Asynchronous CDMA Systems

Emad AlSusa, Ahmed ElKalagy, University of Manchester, UK

An Effective Candidate List Strategy for Tabu Search Based QoS Multicast Routing

Mahsa Armaghan, Abolfazl T. Haghighat, Mohammadreza Armaghan, Islamic Azad University, Iran

Analyzing the Capacity of Wireless Ad Hoc Networks

Roya E. Rezagah, Abbas Mohammadi, Amirkabir University of Technology (Tehran Polytechnic), Iran

Thursday, September 24, 11:00-12:30, (GRAND BALLROOM 1)

S3 - MOBILE AND WIRELESS COMMUNICATIONS II

Chair: Shigeru Kashihara, Nara Institute of Science and Technology, Japan

A Resource Allocation Algorithm for Cluster-based Cooperative MIMO in Wireless Sensor Networks

XiaoJun Wen, D.I. Laurenson, the University of Edinburgh, UK

Efficient Data Delivery Adaptable to Moving Nodes in Mobile Mesh Network

Shigeru Kashihara, Takuma Hayashi, Yuzo Taenaka, Takeshi Okuda, Suguru Yamaguchi, Nara Institute of Science and Technology, Japan

On the Equivalence Between the MMSE Receiver and Tikhonov Regularization

Masoud Alghoniemy, University of Alexandria, Egypt

UWB Channel Measurements in Office Desktop Environment

Duje Čoko, Dinko Begušić, Zoran Blažević, University of Split, Croatia

Thursday, September 24, 14:00-15:30, (GRAND BALLROOM 1)

S4 - MOBILE AND WIRELESS COMMUNICATIONS III

Chair: Antonio Sarolic, University of Split, Croatia

A Novel Two-Antenna Spatial Modulation Technique with Simultaneous Transmission

Ahmed ElKalagy, Emad AlSusa, University of Manchester, UK

Extracting Secret Key from Channel Measurements in Wireless Sensor Networks

Toni Perković, Dinko Begušić, University of Split, Croatia

Level Crossing Rate and Average Fade Duration of SC Macrodiversity System over Independent Hoyt Fading Channels

Mihajlo Stefanović, Dragana Krstić, Stefan Panić, Zoran Popović, University of Niš, Serbia

Measurements and Theoretical Evaluation of Attenuation of Incident Electromagnetic Wave in a Road Tunnel at 97.9 MHz

Zlatko Živković, University of Split, Croatia; Ante Ribičić, HAKOM – Croatian Post and Electronic Communications Agency, Croatia; Antonio Šarolić, University of Split, Croatia

Thursday, September 24, 16:00-17:30, (GRAND BALLROOM 1)

S5: COMMUNICATION SOFTWARE

Chair: Gottfried W.R. Luderer, Arizona State University, USA

Enforcing access restrictions on terminal maintenance tasks using smart cards

Goran Matanović, Kristijan Matanović, Sedam IT d.d, Croatia; Miljenko Mikuc, University of Zagreb, Croatia

Software Component Quality Prediction in the Legacy Product Development Environment Using Weibull and Other Mathematical Distributions

Lovre Hribar, Ericsson Nikola Tesla R&D Center, Croatia

Implementation and Evaluation of Mobile Ticket Validation Systems for Value-Added Services

Darian Škarica, Hrvoje Belani, Sanja Illeš, University of Zagreb, Croatia

Semi-Distributed LTL Model Checking for Actor Based Modeling Languages

Ehsan Khamespanah, Mohamadreza Razzazi, *Amirkabir University of Technology, Iran*

Friday, September 25

Friday, September 25, 15:00-16:30, (GRAND BALLROOM 1)

S6: INFORMATION INFRASTRUCTURE AND SECURITY

Chair: Mario Čagalj, University of Split, Croatia

SSSL: Shoulder Surfing Safe Login

Toni Perković, Mario Čagalj, Nikola Rakić, *University of Split, Croatia*

A Key Agreement Protocol for P2P VoIP Applications

Riccardo Pecori, Luca Veltri, *University of Parma, Italy*

Three Levels Network Analysis for Anomaly Detection

Bruno B. Zarpelão, Leonardo S. Mendes, *University of Campinas, Brasil*; Mario L. Proença Jr., *State University of Londrina, Brasil*; Joel J. P. C. Rodrigues, *University of Beira Interior, Portugal*

Detection of Illicit Traffic based on Multiscale Analysis

Eduardo Rocha, Paulo Salvador, António Nogueira, *University of Aveiro, Portugal*

Analyses and Comparisons of Technologies for Rural Broadband Implementation

Drago Žagar, Višnja Križanović, J. J. Strossmayer University *Osijek, Croatia*

Friday, September 25, 15:00-16:30, (GRAND BALLROOM 3)

S7- INTERFACES AND COMMUNICATION PROTOCOLS

Chair: Vladan Papic, University of Split, Croatia

Utilization of Open-Source High Availability Middleware in Next Generation Telecom Services

Marijan Zemljić, Ivan Skuliber, Saša Dešić, *Ericsson Nikola Tesla d.d., Croatia*

Mechanisms for Diameter service performance enhancement

Dinko Matijašević, Igor Gizdić, Darko Huljenić, *Ericsson Nikola Tesla d.d., Croatia*

Modeling the UPnP-UP Protocol using Coloured Petri Nets

Taciana Rached, Kyller Gorgônio, Angelo Perkusich, Hyggo Almeida, *Federal University of Campina Grande, Brasil*

Evaluation Approach for Efficiency – Fairness tradeoff on the Internet

Elly Amani Gamukama, Oliver Popov, *Stockholm University, Sweden*

Topology Control Using Distributed Power Management Algorithm for Mobile Ad Hoc Networks

Nuraj Pradhan, Tarek Saadawi, *City University of New York, USA*

Friday, September 25, 15:00-16:30, (TERRACE BALLROOM 2)

S8: SIGNAL PROCESSING AND CODING

Chair: Julije Ozegovic, University of Split, Croatia

On the Detection of DNA Periodicities by Spectral Analysis and Adaptive Mappings: Cost Functions Comparison

Mauricio A. Caceres, Roberto Garelo, *Politecnico di Torino, Italy*

A Sensor-Based Framework for Detecting Human Gait Cycles Using Acceleration Signals

Mahsa Salehi, Mohammadreza Razzazi, *Amirkabir University of Technology, Iran*

Friday, September 25, 17:00-18:30, (GRAND BALLROOM 1)

S9: TELECOMMUNICATIONS SERVICES AND QoS

Chair: Zoran Blazevic, University of Split, Croatia

Video Transmission over TFRC using cross-layer power management

Christos Bouras, Apostolos Gkamas, Vaggelis Kapoulas, Vassilis Papapanagiotou, Kostas Stamos, *Research Academic Computer Technology Institute Rion, Greece*; Giannis Zaoudis, *University of Patras, Greece*

Performance Evaluation of Simulcast vs. Layered Multicasting over Best-effort Networks

Christos Bouras, Apostolos Gkamas, *Research Academic Compute Technology Institute Rion*; Georgios Kioumourtzis, *University of Patras, Greece*

Adaptive User Movement Prediction for Advanced Location-aware Services

Marin Vuković, Goran Vujnović, Darko Grubišić, *University of Zagreb, Croatia*

Evaluating Rate-Estimation for a Mobility and QoS-Aware Network Architecture

Nuno Vasco Lopes, Maria João Nicolau, Alexandre Santos, *University of Minho, Portugal*

Scheduling and Drop Policies for Traffic Differentiation on Vehicular Delay-Tolerant Networks

Vasco N. G. J. Soares, *Instituto de Telecomunicações, Portugal*; Farid Farahmand, *Sonoma State University, USA*; Joel J. P. C. Rodrigues, *Instituto de Telecomunicações, Portugal*

TIMETABLE A: TECHNICAL PROGRAM, WORKSHOPS

Hotel Amfora, Thursday, September 24			
Time/Hall	GRAND BALLROOM 1	GRAND BALLROOM 3	TERRACE BALLROOM 2
08:00-12:30 14:00-17:30	REGISTRATION		
09:00-10:30	S1: Mobile and Wireless Communications I	S2: Communication Theory	WICT/I: Workshop on Information and Communication Technologies I
11:00-12:30	S3: Mobile and Wireless Communications II	SYM1/I: Symposium on Environmental Electromagnetic Compatibility (EEMC)	WICT/II: Workshop on Information and Communication Technologies II
12:30-14:00	Lunch		
14:00-15:30	S4: Mobile and Wireless Communications III	SYM1/II: Symposium on Environmental Electromagnetic Compatibility (EEMC)	SS1: Special Session on RFID technologies & the Internet of things
16:00-17:30	S5: Communications Software	SYM1/III: Symposium on Environmental Electromagnetic Compatibility (EEMC)	SS2: Special Session on Mobile Wireless Networks
17:30-18:00	Invited talks		

Hotel Amfora, Friday, September 25			
Time/Hall	GRAND BALLROOM 1	GRAND BALLROOM 3	TERRACE BALLROOM 2
08:00-13:00 15:00-18:30	REGISTRATION		
9:00-10:30	SS3: Special Session on QoS in Wired and Wireless Networks	SYM1/IV: Symposium on Environmental Electromagnetic Compatibility (EEMC)	WICT/III: Workshop on Information and Communication Technologies III A
11:30-13:00	OPENING CEREMONY & KEYNOTE SPEECH (GRAND BALLROOM 2)		
13:00-15:00	Conference Luncheon		
15:00-16:30	S6: Information Infrastructure and Security	S7: Interfaces and Communication Protocols	S8: Signal Processing and Coding
17:00-18:30	S9: Telecommunications Services and QoS	SYM1/V: Symposium on Environmental Electromagnetic Compatibility (EEMC)	WICT/IV: Workshop on Information and Communication Technologies IV
18:45-19:15	Invited talks		

Ship "Marko Polo", Saturday, September 26		
Time/Hall	BRAČ	KORČULA
08:15 – 11:00	Conference sailing to Korčula	
09:00 – 10:30	SS4: Special Session on Ad-Hoc and Sensor Networks	WICT/V: Workshop on Information and Communication Technologies V
11:00 – 14:00	Guided Tour in Korčula	
15:00 – 17:00	Conference sailing back to Split	
17:30 – 21:00	Guided Tour and evening in Split	

TIMETABLE B: TUTORIALS, BUSINESS FORUM, MEETINGS

Hotel Amfora, Thursday, September 24		
Time/Hall	GRAND BALLROOM 2	BURA I JUGO
08:00-13:00 15:00-18:30	REGISTRATION	
09:00-10:30		Tutorial T3 (D. Poljak)
12:30-14:00	Lunch	
14:00-15:30	Business Forum: Presentations	Section on Research Topics of PhD students in Engineering I
16:00-17:30	Workshop on education in ICT I	

Hotel Amfora, Friday, September 25		
Time/Hall	GRAND BALLROOM 2	BURA I JUGO
08:00-13:00 15:00-18:30	REGISTRATION	
09:00-10:30	EMCS President's Message	Tutorial T1 (Deluxe Boardroom) (G. Luderer)
11:30-13:00	OPENING CEREMONY & KEYNOTE SPEECH (GRAND BALLROOM 2)	
13:00-15:00	Conference Luncheon	
15:00-16:30	BF: Workshop on e-Government	Section on Research Topics of PhD students in Engineering II
17:00-18:30	BF: Invited talks, D. Lučić, HAKOM K. Antonović, MMPI S. Čelar, FESB	IEEE EMCS DL Talk (Deluxe Boardroom)

Ship "Marko Polo", Saturday, September 26		
Time/Hall	HVAR	VIS
08:15 – 11:00	Conference sailing to Korčula	
09:00 – 10:30	EMC: Ask the experts	Workshop on education in ICT II
11:00 – 14:00	Guided Tour in Korčula	
15:00 – 17:00	Conference sailing back to Split	
17:30 – 21:00	Guided Tour and evening in Split	

SoftCOM 2009 PROFESSIONAL PROGRAM: WORKSHOPS

Thursday, September 24

Thursday, September 24, 9:00-10:30, (TERRACE BALLROOM 2)

WICT/I – WORKSHOP ON INFORMATION AND COMMUNICATION TECHNOLOGIES I

Chair: Elisa Benetti, University of Ferrara, Italy

Agent UML for Reliable Multicast Protocols Design
Elisa Benetti, Gianluca Mazzini, University of Ferrara, Italy

Using modeling techniques in managing business process from user requirements to solution
Bisera Bujic, Zagrebacka Banka, Croatia

Performance Evaluation of A Hybrid Discovery Mechanism for Real Time Data Distribution Service
Jong-Geun Park, Electronics & Telecommunications Research Institute, Republic of Korea; Hoon Choi, Da-Ham Cha, Chungnam National University, Republic of Korea; Young-Boo Kim, Electronics & Telecommunications Research Institute, Republic of Korea; Chum-Su Kim, Agency for Defence Development, Republic of Korea

Modeling CSMA-CA protocol with Coloured Petri Nets for Wireless Sensor Networks Applications
José Mauricio Neto, José Sérgio da Rocha Neto, Kyller Gorgônio, Angelo Perkusich, Federal University of Campina Grande, Brazil

A Performance Comparison of Routing Protocols for Mobile Adhoc Networks using NS-2
Davinder S. Saini, Anchal Dhiman, Sukrita Bhatia, Sumedha Singla, Jaypee University of Information Technology, India

Thursday, September 24, 11:00-12:30, (TERRACE BALLROOM 2)

WICT/II – WORKSHOP ON INFORMATION AND COMMUNICATION TECHNOLOGIES II

Chair: Alice Masini, University of Ferrara, Italy

Providing Service Grid Capabilities on Mobile Phones
Meisam Hejazinia, Mohammad Reza Razzazi, Amirkabir University of Technology, Iran

Multidimensional Routing: a New Frontiere for Wireless Global Optimization
Alice Masini, Gianluca Mazzini, University of Ferrara, Italy; Guido Riva, Fondazione Ugo Bordoni, Italy

Dynamic Service Framework for Seamless Video Streaming over Heterogeneous Devices
Yoon-Sik Yoo, Young-Sik Chung, Eui-Hyun Paik, Electronics and Telecommunications Research Institute, Republic of Korea

Some Stochastic computing simulation tests with different Boolean logic elements
Karol Nagy, Peter Farkaš, Slovak University of Technology, Slovakia

Small Coalitions in Cognitive Radio Networks
Rade Stankovic, Toni Perković, Mario Čagalj, University of Split, Croatia

Thursday, September 25, 14:00-15:30, (GRAND BALLROOM 2)

BUSINESS FORUM

Chair: Stanko Ciglaric, Slovenian Institute of Quality and Metrology, Slovenia

A Standardization Model for Choosing and Managing Customer Relationship Management Projects
Jasmina Magdic, Adacta d.o.o., Croatia

Global financial crisis from the perspective of an EMC testing authority; another view
Stanko Ciglaric, Slovenian Institute of Quality and Metrology, Slovenia

Thursday, September 24, 16:00-17:30, (GRAND BALLROOM 2)

WORKSHOP ON EDUCATION IN ICT I

Chair: Dinko Begusic, University of Split, Croatia

Obstacles in the introduction of computer supported real and virtual laboratory exercises into biology teaching in lower secondary schools
Andreja Špernjak, Andrej Šorgo, University of Maribor, Slovenia

Teachers' and Students' ICT Competences in the Context of the Bologna Process
Nevenka Tatković, University Juraj Dobrila, Pula

Friday, September 25

Friday, September 25, 9:00-10:30, (TERRACE BALLROOM 2)

WICT/III A – WORKSHOP ON INFORMATION AND COMMUNICATION TECHNOLOGIES III

Chair: Zoran Skocir, University of Zagreb, Croatia

A Design and Implementation of Smart Guide Services with the Semantic Service Discovery
HyunKyung Yoo, JeongHwan Kim, SangKi Kim, Electronics and Telecommunications Research Institute (ETRI), Republic of Korea

Recognition of damaged characters – Monte Carlo method
Željko Deljac, Robert Moštak, HT-Croatian telecommunications, Croatia; Predrag Brođanac, V. High School, Croatia

Providing Data Grid Capability Using Society Network on Mobile Phones
Meisam Hejazinia, Mohammad Reza Razzazi, Amirkabir University of Technology, Iran

New approach to designing a Zero-overshoot Automatic Level Control for high-power amplifiers
Bertrand Gerfault, *Thales communications R&D, France*;
Balwant Godara, *ISEP, France*; Frank Chahbazian, *GERAC R&D, France*

Human resources management system for Higher Education institutions
Ivona Zakarija, *University of Dubrovnik, Croatia*; Zoran Skočir, *University of Zagreb, Croatia*; Krunoslav Žubrinić, *University of Dubrovnik, Croatia*

Friday, September 25, 9:00-10:30, (BURA I JUGO)

WICT/III B – WORKSHOP ON INFORMATION AND COMMUNICATION TECHNOLOGIES III

Chair: Ivan Marinovic, University of Split, Croatia

The Future and Challenges for Spectrum Management Automation in Kosovo
Shkelzen Cakaj, Muharrem Shefkju, *Post and Telecommunication of Kosovo (PTK), Kosovo*

Selection of the base set of methods for computer forensic
Ivica Ružić, *University of Split, Croatia*; Dalibor Marijanović, *Business innovation centre of Croatia –BICRO, Croatia*; Mojca Ciglarič, *University of Ljubljana, Slovenia*

Comparison of threshold methods for players segmentation
Vladimir Pleština, Nikola Rožić, Vladan Papić, *University of Split, Croatia*

Influence of unsharp masking on OCR performance
Matko Šarić, Dinko Begušić, Hrvoje Dujmić, *University of Split, Croatia*

Friday, September 25, 17:00-18:30, (TERRACE BALLROOM 2)

WICT/IV – WORKSHOP ON INFORMATION AND COMMUNICATION TECHNOLOGIES IV

Chair: Ivan Marinovic, University of Split, Croatia

A Low Maintenance Solution for Diskless High Performance Linux Clusters
Chiara Taddia, *Lepida S.p.A., Italy*; Raffele Rugin, Gianluca Mazzini, *University of Ferrara, Italy*

VoIP-Fe: Resource Optimization and Dimensioning of a Large VoIP Infrastructure
Federico Fergnani, Gianluca Mazzini, *University of Ferrara, Italy*

Transmitted Power Reduction Measurements for Common Indoor Materials at 5.5 and 10 GHz
Željko Ribičić, Zoran Blažević, Maja Šekelja, *University of Split, Croatia*

In-Band and Out-of-Band Response of an Indoor TV UHF Antenna
Duje Strukan, Antonio Šarolić, *University of Split, Croatia*

Evaluating series resistance of amorphous silicon solar cells using one diode model with variable diode ideality factor
Ivan Marasović, Tihomir Betti, Spomenka Bovan, *University of Split, Croatia*

MPLS Traffic Engineering
Franjo Gudelj, *Eronet Mostar, Bosnia and Hercegovina*; Milutin Kapov, *University of Split, Croatia*

Saturday, September 26

Saturday, September 26, 9:00-10:30, (KORČULA)

WICT/V – WORKSHOP ON INFORMATION AND COMMUNICATION TECHNOLOGIES V

Chair: Milutin Kapov, University of Split, Croatia

User Cooperation in Access Point Selection
Carlo Bellettini, Gianluca Mazzini, *University of Ferrara, Italy*

Comparison of SNMP Management Features Between “Classical” Telecommunications Network and IP Based Network

Oliver Jukić, *Virovitica College, Croatia*
Performance Comparison of Network Through Continuous and Discrete time Queueing Models
Syed Asif Ali Shah, Wajiha Syed, Gordhan Das Menghwar, *Vienna University of Technology, Austria*
Proactively removal of the users interferences on BB services
Robert Moštak, Željko Deljac, Velimir Piškor, *HT-Croatian telecommunications, Croatia*

Launching of GSM, 3G Network in Rwanda
Honorine Mujiyambere, Gianluca Mazzini, *University of Ferrara, Italy*

QoS Enabling Call Admission Control In UMTS, LTE Networks
Károly Lendvai, Sándor Szabó, *Budapest University of Technology and Economics, Hungary*

Gottfried Luderer*Arizona State University, USA***TOWARD HUMAN-CENTRIC COMPUTING - EVOLUTION OF SOFTWARE ARCHITECTURES**

Abstract: Ten years ago, at SoftCOM 1999, we gave a seminar lecture on the evolution of software architecture. It seems appropriate to revisit the topic and focus on some recent futuristic developments in this field. Two major directions stand out pursued by several organizations: Pervasive Computing and Human-Centric Computing. One includes IBM's Project Blue and Carnegie Mellon's project Aura, as prominent representatives of "Pervasive Computing". The other is Project Oxygen under the leadership of MIT with cooperation by several companies (Acer, HP, Nokia, Philips) pursuing the concept of "Human-Centric Computing". The Microsoft Hailstorm project can be considered an early manifestation of pervasive computing. Pervasive systems focus on devices which are portable and constantly connected. Human-Centric systems focus on the solution of human needs with natural interfaces like

speech and gestures. As software architects we look at each system from two complementary aspects: the user's point of view, the exo-architecture, and the builder's point of view, the endo-architecture that deals with structural components and their interactions. In this seminar we are going to briefly review the evolution of software architecture from its beginnings to the present culmination as evident in these new developments

Biography: *Dr. Gottfried W. R. Luderer was appointed Professor, ISS Chair of Telecommunication, at Arizona State University in the Fall of 1990. His current research program in networking includes work in the areas of control of ISDN/Broadband ISDN networks, mobile communication networks, and multimedia communication, which ranges from call processing for intelligent network services to network management. Research emphasis is on advanced software technologies for development of telecommunication networks, as used in switches, for signaling and in network management, with a focus on object and component technology and formal definition techniques. From 1965 to 1989, Dr. Luderer was with AT&T Bell Labs, at last directing research on next generation switch architectures, based on fast packet switching technology on the hardware side and object-oriented design technology on the software side, resulting in some of the earliest demonstration networks for multimedia communication. Dr. Luderer holds Diplomingenieur (M.S) and Dr.-Ing. (Ph.D) degrees in Electrical Engineering from the Technical University of Braunschweig, Germany. He holds two patents. While at Bell Labs, he taught at Stevens Institute of Technology in Hoboken, NJ, and at Princeton University. He is member of ACM, IEEE, IEEE Computer and Communication Societies.*

Hartmut Brauer*Institute for Information Technology, Ilmenau University of Technology, Germany***APPLICATION OF THE MAGNETIC FIELD TOMOGRAPHY TECHNIQUE TO THE MODELING AND SIMULATION OF BIOMAGNETIC FIELDS**

Abstract: Tomography is the study of the reconstruction of two and three-dimensional objects from one-dimensional slices. Computed tomography is the technique of estimating the interior of objects from measurements through the object, well known from medical applications where usually X-rays are used. In the case of magnetic field tomography (MFT) the ionizing radiation is relieved by harmless magnetic field measurements. The paper reviews the MFT techniques and describes their biomedical applications. Finally, the use of MFT for solving inverse field problems in biomagnetism (Magnetic Source Imaging, MSI) as well as the verification of numerical simulations by means of physical phantoms will be shown in detail.

Dragan Poljak*University of Split, Croatia***HUMAN EXPOSURE TO NON-IONIZING ELECTROMAGNETIC RADIATION**

Abstract: The presence of non-ionizing electromagnetic radiation in the environment has been associated with the controversy on the possible adverse health effects. Generally, the effects of electromagnetic fields on humans depend on their intensity and frequency. Thus, the fields are split into two main categories: low frequency spectrum (up to about 30kHz) and high frequency spectrum (from 30kHz to 300GHz). The objective of the tutorial is to provide fundamental information regarding the human interaction with electromagnetic radiation and to cover several aspects of electromagnetic and thermal dosimetry, biological effects, measurement techniques and exposure limits regarding the possible radiation hazard with reference to the existing International Commission on Non-Ionizing Radiation Protection (ICNIRP) Guidelines for human beings exposure limits. The tutorial starts with some general aspects of electromagnetic fields coupling to the human body and related possible health risk. The introductory part will also provide a quick course in fundamentals of electromagnetic theory. The participants will be then introduced to the known coupling mechanisms between electromagnetic fields and the human body. Relevant safety standards and

limiting exposures to electromagnetic radiation, established by the international guidelines and some protective measures will be discussed, as well. This will be followed by certain calculation and measuring techniques for the analysis of electromagnetic field sources from extremely low frequency (ELF) to high frequency (HF) range. The central part of the tutorial deals with the essentials of the mathematical modeling of humans exposed to electromagnetic fields using both simplified cylindrical antenna and realistic anatomically based representation of the human body and the related boundary element (BE) solution procedures of the governing equations. The tutorial ends up with human body thermal response due to an absorbed electromagnetic energy from external sources. Some details regarding the numerical treatment of a stationary and transient bio-heat transfer equations via finite element method (FEM) will be given.

Biography: *Dragan Poljak was born in Split, Croatia in 1965. He received his BSc in 1990, his MSc in 1994 and PhD in electrical engineering in 1996 from the University of Split, Croatia. He is the Full Professor at the Department of Electronics at the University of Split, and he is also Adjunct Professor at Wessex Institute of Technology. His research interests include frequency and time domain computational methods in electromagnetics, particularly in the numerical modeling of wire antenna structures, and recently numerical modeling applied to environmental aspects of electromagnetic fields. To date Professor Poljak has published nearly 200 journal and conference papers in the area of computational electromagnetics, seven authored books and one edited book, by WIT Press, Southampton-Boston., and one book by Wiley, New Jersey. Professor Poljak is a member of IEEE, a member of the Editorial Board of the journal Engineering Analysis with Boundary Elements, and co-chairman of the WIT International Conference on Computational Methods in Electrical Engineering and Electromagnetics. He is also editor of the WIT Press Series Advances in Electrical Engineering and Electromagnetics. Recently, professor Poljak was awarded by the National Prize for Science.*

WORKSHOP ON EDUCATION IN ICT II

Saturday, September 26, 9:00 – 10:30, (VIS)

1. ICT EDUCATION AND INDUSTRY



Vedran Mornar, *FER, University of Zagreb, CROATIA*

ICT education and industry are still only vaguely coupled in Croatia. Higher education institutions more or less independently define and carry out the study programs, without serious interaction with the emerging ICT industry. On the other hand, the industry is mainly interested in the final product, instead of taking active part in teaching and financing. Some solutions to the problem are discussed and proposed.

Vedran Mornar is a Professor of Computing at Faculty of Electrical Engineering and Computing, University of Zagreb, Croatia, where he currently teaches several graduate and undergraduate computing courses. He graduated and received his PhD degree in Computer Science at the same university. As a Fulbright scholar, he studied at University of Southern California, Los Angeles for an academic year. His professional interest is in application of operations research in real world information systems, database design, development and implementation. Currently he is the president of National council for higher education. Since 2006, he has been the dean of Faculty of Electrical Engineering and Computing.

2. EDUCATION IN ICT AT FESB



Tomislav Kilić, *FESB, University of Split, CROATIA*

Since its foundation in 1960 the Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture carries out study programs in the area of information and communication technologies. Bologna process incited significant changes and improvements in education process. New study programmes in the area of ICT have been introduced. In academic year 2008/2009 the first year of the second cycle programs has been implemented. Besides the three cycles of the university study programmes, FESB offers vocational education programmes as well as life long learning programmes..

Tomislav Kilić was born in Ričice, Croatia, in 1961. He received the B.S. and Ph.D. degrees from Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture, University of Split, Croatia, in 1986, and 2001, respectively. Also, he received M.S. degree from the Faculty of Electrical Engineering and Computing, University of Zagreb in 1996. After completing his graduate studies he joined the Radio Industry of Zagreb 1986 and he was engaged in development and design electronic weight systems. Since 1987 he has been Research Assistant and Professor at Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture, University of Split. He was guest scientist at GEM Systems, Toronto, Canada. He has been involved in numerous government and industry-sponsored projects. His research interests include power quality and measurements of electrical and process quantities. Currently he is a dean of Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture.

3. CHALLENGES IN CREATING EFFICIENT ICT EDUCATIONAL SYSTEMS

Goran Škugor, *Ericsson Nikola Tesla d.d., Split, CROATIA*



At the beginning of 21st century, it is very clear that ICT represents a backbone of social and business world. Its tremendous influence on science, industry and generally on paradigm and mindset shift characterize its strategic position today. Since ICT as area has a constant fast growing trend, both academical and industrial ICT education meet very high demands and requirements. Education-related strategy, processes, tools and people represent key challenging areas that have to be adapted to ongoing trends.

Goran Škugor received his B.S. degree in telecommunication engineering from the Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture, University of Split. During his career in Research & Development in Ericsson Nikola Tesla company, he had been working as software engineer and department manager, participating in development of large telecommunication systems. Today, he works as Human Resource Manager having his current interests in fields of organisational and personal development and employee engagement.

SECTION ON RESEARCH TOPICS OF PHD STUDENTS IN ENGINEERING

Thursday, September 24, 14:00 – 17:30, (BURA I JUGO)

Chair: *Ivica Puljak, University of Split, CROATIA*

Tehnike procjene kvalitete audio sustava

Tomislav Vukić, Fakultet elektrotehnike i računarstva Zagreb, Sveučilište u Zagrebu, Hrvatska

A framework for the algebraic semantics approach to requirements specification

Spyros Komninos, Petros Stefaneas, Giorgos Koletsos, NTU Athens

Position Paper: Service Front-End On Future Internet For Reducing Human Anxiety

Santosh Kumar Kalwar, Lappeenranta University of Technology, Department of Information Technology Lappeenranta, Finland

Kontrola toka kao metoda kontrole zagušenja na Internetu

Vesna Pekić, Fakultet elektrotehnike, strojarstva i brodogradnje, Sveučilište u Splitu, Hrvatska

Distribuirani WLAN MAC protokoli za razlikovanje usluga

Ivan Kedžo, Odjel za stručne studije, Sveučilište u Splitu, Hrvatska

BUSINESS FORUM

IEEE EMCS Croatia Chapter

ASK THE EXPERTS ON EMC TOPICS



Moderator: Vesna Roje, University of Split, Croatia

Saturday, September 26, 9:00 – 10:30 (HVAR)

- IEEE Standard 1597.1 (Andy Drozd)
- Cabling (Alistair Duffy)
- Numerical modelling in EMC (Dragan Poljak)
- Measurement procedures in EMC (Antonio Sarolic)
- Biological effects (Dragan Poljak)

EMCS DL LECTURE

VALIDATION OF COMPUTATIONAL ELECTROMAGNETICS

Alistair Duffy, De Montfort University, Leicester, UK

Friday, September 25, 15:00 - 16:30, BURA I JUGO

WORKSHOP ON e-GOVERNMENT

IMPLEMENTATION OF THE E-GOVERNMENT STRATEGY IN CROATIA

Tomislav Vračić, *Central State Administrative Office for e-Croatia, Head of Department, CROATIA*

Friday, September 25, 15:00 – 15:30, (GRAND BALLROOM 2)

The goal of the eGovernment Strategy of the Republic of Croatia is to enable infrastructural transformation of state administrative bodies by use of the information communication technology, directing the entire functioning of public administration towards its users. Thus, the future development of eGovernment of the Republic of Croatia will primarily depend on the satisfaction of the users (inside or outside of the organisation) with the services provided with the help of ICT, their motivation for using them, and their support. Having that in mind this Strategy is determined to develop a framework for the implementation of new goals as well as alignment of existing electronic government activities, emphasizing user satisfaction, rationalization of administrative procedures and preparation and provision of modern electronic services. On that line, this Strategy formulates the guidelines for development of a communication network of state administrative bodies, establishment of data and document management system, development of integrated electronic services as well as raising appropriate level of education for the IT management in state administration



Tomislav Vračić joined Central State Administrative Office for e-Croatia in 2004 until now being involved in number of national strategic projects such as the development of the e-Government Strategy, the development of Broadband Strategy, and development of Digital switchover strategy in Croatia. He was also an Advisor to the State Secretary for e-Croatia in the projects of eIslands and eGovernment grants for broadband development in rural areas. At the moment he is a chair of the expert group which is working on a first draft of the Electronic Office Standard Project as well as a first draft of the Croatian eGovernment Interoperability Framework. He is also responsible for eGovernment benchmarking leading several studies for research of online availability of public services and user centricity. He has bachelor's degree in business administration from the Faculty of Economic & Business in Zagreb where he continued his education in postgraduate study programme "IT Management" with the primary interest in researching a methodology for measuring the success of implementation of ICT in state administration.

E-AGENCY: IMPLEMENTATION OF THE CROATIAN POST AND ELECTRONIC COMMUNICATIONS

Antun Carić, *Silvije Šeremet*, *Croatian Post and Electronic Communication Agency, Croatia*

Friday, September 25, 15:30 – 16:00, (GRAND BALLROOM 2)

Abstract: The paper presents implementation of e-Agency (egovernment) concept into Croatian Post and Electronic Communication Agency. Conceptual, layered architecture of e-Agency has been proposed. Special attention has been paid to the innovation and implementation of the back office and front office layers as well as on implementation of number of e-applications by means of which HAKOM strives to provide high quality services, easy access, effective delivery, and overall stakeholder satisfaction.

BUSINESS FORUM INVITED SPEAKERS

AN OVERVIEW AND A FORECAST OF ELECTRONIC COMMUNICATIONS MARKET IN REPUBLIC OF CROATIA

Dražen Lučić, *Croatian Post and Electronic Communications Agency, Croatia*

Friday, September 25, 17:00 – 17:30, (GRAND BALLROOM 2)

Electronic communication market data in Republic Croatia have been presented, based on public switched telephone networks, mobile telecommunication networks, as well as on radio and television broadcasting. The market development in a new regulatory environment has been forecasted with emphasize on broadband Internet access and on transition to digital television broadcasting. A comparison to the European Union markets has been done.

Dražen Lučić has been the Executive Director of HAKOM since 2009. Before joining HAKOM Mr. Lučić was working at Ericsson in Croatia, Western Europe and Israel for more than twenty years, eventually as Senior Sales Director toward a global telecommunications network operator.

ANALOGUE TO DIGITAL TELEVISION BROADCASTING SWITCHOVER STRATEGY IN CROATIA - THE STATUS OF IMPLEMENTATION

Krešo Antonović, *Director, Electronic Communications and Postal Service Directorate, Ministry of the Sea, Transport and Infrastructure, Croatia*

Friday, September 25, 17:30 – 18:00, (GRAND BALLROOM 2)

Abstract: In July 2008, the Government of the Republic of Croatia adopted Analogue to Digital Television Broadcasting Switchover Strategy, which stipulates fundamental strategic guidelines for the introduction of digital television in Croatia. The analogue terrestrial television switch off is scheduled for 1 January 2011. Two Action Plans for the implementation of the Strategy have been presented. MUX A and MUX B coverage has been analysed. The Strategy also enables the introduction and provision of new services or business models, due to the releasing of the radio frequency spectrum for new allocations and applications upon digital switchover - the possibility of using his digital dividend for various communications services and applications is also discussed. The Government project of granting the subsidies to the TV subscribers to facilitate the purchase of digital TV receivers has been presented as a fully technologically neutral concept.

Krešo Antonović is Director of the Electronic Communications and Postal Service Directorate, Ministry of the Sea, Transport and Infrastructure, since August 2008. Before being appointed to this post, Mr. Antonović was working at the Ministry for more than 14 years. He graduated in 1994 at the Zagreb University, Faculty of Electrical Engineering and Computing (FER), in the field of radio communications (multimedia). Mr. Antonović is a member of the Working Groups for the Preparation of Negotiations with EU in Chapter 10 - Information Society and Media and in Chapter 21 - Trans-European Networks. Since 2006, he is an observer in the Communications Committee of the European Commission (COCOM). He served as a Deputy Head and Head of the national delegation at several ITU world and regional radiocommunications conferences and CEPT assemblies. Mr. Antonović is a member of MIPRO and ELMAR societies in Croatia

TEMPUS 41023-2006: COMPETENCE CENTERS FOR SW ENGINEERING AT THE CROATIAN UNIVERSITIES

Stipe Čelar, *FESB, University of Split*

Friday, September 25, 18:00 – 18:30, (GRAND BALLROOM 2)

During last two years the partners from the EU (Paderborn University, Germany and Mälardalen University, Västerås, Sweden) and other domestic parties interested in the issue of software engineering worked closely on the project named "Collaborative Internationalization of Software Engineering in Croatia". Establishment and growth of competence centers for software engineering at Croatian universities was the aim of all involved partners (universities, governmental institutions, large companies, SME-s, professional organizations). As a result of this joint work three competence centers for software engineering at Croatian universities have been established (Zagreb, Osijek and Split).

PhD **Stipe Čelar** is Assistant Professor at the Department of Electronics (Faculty of Electrical Engineering, University of Split). He completed his BSc in electrical engineering at the University of Split (1992) and PhD studies at the Vienna University of Technology, Austria (1997). After 10 years of experience in software engineering in the SME sector in Croatia and status of university honorary lecturer he moved to the University. Currently he is also the head of the Competence Center for SW engineering at the University of Split. His fields of interests include information systems and business processes.

ELECTROMAGNETIC FIELD EFFECTS DEMONSTRATIONS

Friday, September 25, 17:30–18:15, (GRAND BALLROOM 3)

UNDERSTANDING ELECTROMAGNETIC EFFECTS USING PRINTED CIRCUIT BOARD DEMOS



Frits Buesink, *University of Twente, The Netherlands*

Electromagnetic fields are considered by many students as a difficult subject. Unwanted electromagnetic fields are even tougher for students. We have developed many experiments as demonstrations (demos) to show the effect of electromagnetic fields in real life products. This paper gives a brief overview of these demos.

Frits J.K. Buesink graduated in 1977 at the Twente University of Technology (UT), Electrical Engineering Department, in Enschede(Netherlands) and works at the former HollandseSignaalApparaten, now Thales Nederland B.V. in Hengelo, the Netherlands. In 1989 he became involved with EMC and has set up educational programs for EMC awareness in the various disciplines in the company. He is a member of the Environmental Competence Center at Thales and works as an EMC engineering consultant for various programmes. In May 2009, he also joined the Faculty of Telecommunications Engineering at the Twente University as a part time researcher to coach PhD students in the EMC disciplines

GENERAL INFORMATION

Hvar town



Split town



VENUE



CONFERENCE HOTEL INFORMATION

Tucked into a tranquil bay, surrounded by a lush pine grove, and only a short ten-minute walk from the historic city of Hvar, Amfora is the most exciting new resort in the Adriatic. With its

state-of-the-art conference facility, diverse amenities and a spectacular cascading pool, Amfora is ideal for family vacations, team building and large conferences. Whether you are relaxing in one of the stone cabanas at the 1930's Bonj 'les bains' located 2 minutes from Amfora, enjoying a local seafood dish at one of hotel's fine restaurants, or brainstorming with your colleagues in the deluxe boardroom you'll be amazed at how the light and sea dance around every corner of this hotel.

TRAVELING TO SPLIT

by air: Split can be reached directly from Amsterdam, Brussels, Frankfurt, London, Lyon, Manchester, Munich, Paris, Vienna and via Zagreb from all world airports.

by ship: Split harbor is daily connected with Ancona. Ship connections are also available with Venice, Pescara and Bari.

TRAVELING TO HVAR FROM SPLIT



SHIP AND CRUISING INFORMATION

The second part of the Conference program will be held aboard the ship "Marko Polo"

SHIP LOCATIONS:

Stari Grad, Sept. 26 morning
Vela Luka, Sept. 26 early afternoon
Split, Sept. 26 afternoon

THE ITINERARY:

HVAR – KORČULA, Sept. 26

07.30 Departure from Hvar to Stari Grad
08.15 Departure from Stari Grad to Korčula
11.15 Arrival at Korčula
13.00 Departure to Vela Luka
13.45 Departure to Split from Vela Luka
17.00 Arrival at Split



WEATHER

In September the weather in Split is very nice, with an average temperature of about 20 degrees Celsius and the sea temperature is agreeable for swimming



PROCEEDINGS

All participants will receive the Final Program and CD – ROM Proceedings when registering at the conference desk.

LANGUAGE

The Conference language is English.

REGISTRATION

Thursday, September 24: 08:00-12:30, 14:00-17:30
Friday, September 25: 08:00-13:00, 15:00-18:30

SECRETARY

Josko Radic
FESB Split
University of Split
R. Boškovića b.b.
Fax: +385 21 463 877
E-mail: softcom@fesb.hr
21000 Split, Croatia
Tel: +385 21 305 825

NOTES:
