SoftCOM 2013 - CONTENTS

GENERAL CHAIR MESSAGE

Dear participants of the SoftCOM 2013 conference,

It is my pleasure to welcome you in the capacity of a general chair. I am very glad to have an opportunity to take part in the organization of a conference that gathers researchers and professionals from academia and industry to share experiences and new ideas in such a dynamic area as ICT. In the new emerging knowledge based economies, it is crucial for a company success that it defines and secures competitiveness based on its unique advantages. Competitiveness based on knowledge, as well as close collaboration of industry with scientific and academic community are the key success factors in today's highly competitive global marketplace. This collaboration is essential for the industry, academia and society in general, and our ICT industry is leading the way.

In the global world of today, connectivity to the network all the time and everywhere is taken for granted. Mobility supports interactions whenever desired, connecting everybody and everything. This enables people to collaborate, innovate, learn, participate… in ways we never thought possible and opens ground for new discoveries. In the Networked Society anything that can benefit from a connection will be connected, and we expect to see 50 billion connected devices by 2020. In this Networked Society where connectivity is the fuel of progress, the reliable and predictable performance of the underlying technology and operations is a key to a growing future for all. Networks must be transformed to become smart, scalable and give superior performance. The success of the Networked Society will rest on our ability to bring together broadband, mobility, and cloud computing.

The 21st Conference on Software, Telecommunications and Computer Networks (SoftCOM 2013), co-sponsored by the IEEE Communications Society (ComSoc), will be held in the beautiful cities of Split and Primošten, located at the Croatian Adriatic coast. It will be my pleasure to meet you at the conference in the pleasant Mediterranean ambience.

Welcome!

Siniša Krajnović, PhD
Vice President, Ericsson AB

TECHNICAL PROGRAM CHAIRS MESSAGE

The 21st Conference on Software, Telecommunications and Computer Networks (SoftCOM 2013) will be held in attractive ambience of the Zora hotel, Primošten, September 18 to 20.

Researchers and experts from industry, research institutes and universities from 30 countries all around the world have submitted in total 140 papers for presentation at SoftCOM 2013. Submitted papers have been reviewed by more than 200 scientists from universities, institutes and ICT companies. All accepted papers have been carefully selected based on their contribution, relevance, conceptual clearness and overall quality. 47% of submitted papers have been recommended for presentation within the technical program.

The technical conference program features six general conference sessions, one symposium, five special sessions. The Symposium on Environmental Electromagnetic Compatibility has been organized by researchers from University of Split. The special sessions are dedicated to hot topics including: RFID Technologies and the Internet of Things, Ad Hoc and Sensor Networks, Green Networking, Smart Environment Technologies, and QoS in Wired and Wireless Networks.

In conjunction with the SoftCOM 2013 conference a Business Forum will be organized featuring invited talks, Industry panel and workshops with participation of managers, experts, and institution representatives.

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.

Program Committee Co-chairs
Nikola Rozic, Dinko Begusic

SoftCOM 2013 COMMITTEES

TECHNICAL PROGRAM COMMITTEE

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

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Vesna Roje, University of Split, Croatia
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Petar Šolić, 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)

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IEEE CROATIA SECTION

IEEE COMMUNICATIONS SOCIETY – CROATIA CHAPTER

http://www.fesb.hr/SoftCOM

SoftCOM 2013 FINAL PROGRAM OUTLINE

Wednesday, September 18, 2013 *(location: Primošten, **Hotel Zora**)*

> *08.00 - 12.30 Registration*
>
> *09.30 - 10.30 Technical program, Tutorials*
>
> *10.30 – 11.00 Coffee break*
>
> *11.00 - 12.30 Technical program, Tutorials*
>
> *12.30 - 13.00 Plenary talks*
>
> ***Lunch time***
>
> *14.30 - 18.30 Registration*
>
> *15:00–16:30 Special sessions, Workshops, Tutorials*
>
> *16.30 – 17.00 Coffee break*
>
> *17.00 - 18.30 Special sessions, Workshops, Tutorials*

Thursday, September 19, 2013 *(location: Primošten, **Hotel Zora**)*

> *08.00 - 11.00 Registration*
>
> *09.00 - 10.30 Special sessions, Workshops, Tutorials*
>
> *10.30 – 11.30 Coffee break*
>
> *11.30 – 13:00 Opening ceremony, Plenary session*
>
> ***Conference luncheon***
>
> *15.00 - 17.30 Registration*
>
> *15.00 – 17.30 Special Sessions, Symposia, Workshops, Invited talks, Tutorials*
>
> *18.00 Bus Transfer to Split*
>
> *19.00 - 20.30 Giuded tour in Split*
>
> *20.30 - 21.30 Welcome Party in Split (Diocletian Palace Underground)*
>
> *21.30 Bus Transfer to Primosten*

Friday, September 20, 2013 *(location: Primošten, **Hotel Zora**)*

> *8.30 – 10:00 Technical program, Special Sessions, Symposia, Workshops*
>
> *10.00 – 10.30 Coffee break*
>
> *10.30 – 12.00 Technical program, Special Sessions, Symposia, Workshops*
>
> *12.00 - 18.00 Coference Trip and Lunch*

Joel Rodrigues
Instituto de Telecomunicaçoes, University of Beira Interior, Portugal

New Frontiers for Mobile Health

This presentation will focus on a new hot topic on e-health technologies considering mobility environments and mobile technologies: Mobile Health. Information and communication technologies have rapidly grown in the few last decades along with mobile Internet concept of anywhere and anytime connection. In this context, Mobile Health (m-Health) proposes to deliver healthcare services, overcoming geographical, temporal and even organizational barriers. Pervasive and m-Health services aim to respond several emerging problems in health services, including, the increasing number of chronic diseases related to lifestyle, high costs in existing national health services, the need to empower patients and families to self-care and manage their own healthcare, and the need to provide direct access to health services, regardless of time and place. This keynote speech will address the most relevant contributions for healthcare and e-health systems, focusing on the mobile health revolution and evolution. The top and more used m-health applications in the mobile market and several ongoing works will be presented. Trends and insights on future research works are also considered.

Joel Rodrigues is a professor in the Department of Informatics of the University of Beira Interior, Covilha, Portugal, and researcher at the Instituto de Telecomunicaçoes, Portugal. He received a PhD degree in informatics engineering, an MSc degree from the University of Beira Interior, and a five-year BSc degree (licentiate) in informatics engineering from the University of Coimbra, Portugal. His main research interests include sensor networks, e-health, e-learning, vehicular delay-tolerant networks, and mobile and ubiquitous computing. He is the leader of NetGNA Research Group (http://netgna.it.ubi.pt), the Vice-chair of the IEEE ComSoc Technical Committee on Communications Software, the Vice- Chair of the IEEE ComSoc Technical Committee on eHealth, and Member Representative of the IEEE Communications Society on the IEEE Biometrics Council. He is the editor-in-chief of the International Journal on E-Health and Medical Communications, the editor-in-chief of the Recent Patents on Telecommunications, and editorial board member of several journals. He has been general chair and TPC Chair of many international conferences. He is a member of many international TPCs and participated in several international conferences organization. He has authored or coauthored over 250 papers in refereed international journals and conferences, a book, and 2 patents. He had been awarded the Outstanding Leadership Award of IEEE GLOBECOM 2010 as CSSMA Symposium Co-Chair and several best papers awards. Prof. Rodrigues is a licensed professional engineer (as senior member), member of the Internet Society, an IARIA fellow, and a senior member of ACM and IEEE.

Abdelhamid Mellouk, PhD
Head of "Towards adaptIve Network Controls (TINC)" Team, LiSSi Laboratory, University of Paris-Est C. Vdm (UPEC), France

Quality of Experience vs. Quality of Service : Application for a CDN Architecture

We are witnessing in recent years a rapid development of interconnecting applications. In addition to those that contributed to the popularity of the early Internet (e-mail, file transfer, etc.), there are now applications that rely on network data more sensitive. They include sound applications (voice, music programs, etc.), image applications (television programs, videoconferencing, video on demand, etc.) and urgent information applications (market orders). However, it is important for the operators and providers not to forget sight of the reason for this new infrastructure: to provide network service that user wants to use. Accomplishing this idea means assuring positive experience of end users. Therefore, service providers are switching the focus from traditional Quality-of-Service (QoS) to user satisfaction, which is the overall success of a network from the user perspective. The perceived end-to-end quality becomes one of the main goals required by users that must be guaranteed by the network operators and the Internet service providers, through manufacturer equipment. This is referred to as the quality of experience (QoE) notion that becomes commonly used to represent user perception. This presentation will focus on a vision of a new paradigm which make interactions first-class objects from the perspective of the user, the application and the network components. This is achieved by analyzing the interaction between the user and the application with quality perception metrics which are used to fix the control/command chain in network components. The idea here is how to integrate these metrics into a control/command chain in order to construct a network system? This keynote speech will address the design of an adaptive loop for improving the service quality of a network system by taking into account the end-user feedback. In this keynote, we focus on two main mechanisms for a Content Delivery Network Architecture: routing and server selection function.

Abdelhamid Mellouk [IEEE Senior Member] (mellouk@u-pec.fr) is a full professor at University of Paris-Est (UPEC), Networks & Telecommunications (N&T) Department and LiSSi Laboratory, IUT Creteil/Vitry, France. He graduated in computer network engineering from the Computer Science High Eng. School, University Oran-EsSenia, Algeria, and the University of Paris Sud XI Orsay, received his Ph.D. in informatics from the same university, and a Doctorate of Sciences (Habilitation) diploma from UPEC.
Founder of the Network Control Research activity in UPEC with extensive international academic and industrial collaborations, his general area of research is in adaptive real-time control for high-speed new generation dynamic wired/wireless networking in order to maintain acceptable quality of service/experience for added value services. He investigate particularly the use of artificial neuronal intelligence together with biologically inspired techniques such as reinforcement learning to control network behavior in real time and to improve network robustness and resilience. He is an active member of the IEEE Communications Society and held several offices including leadership positions in IEEE Communications Society Technical Committees. He has published/coordinated five books and several refereed international publications in journals, conferences, and books, in addition to numerous keynotes and plenary talks in flagship venues. He serves on the Editorial Boards or as Associate Editor for several journals, and he is chairing or has chaired (or co-chaired) some of the top international conferences and symposia (including IEEE ICC and IEEE GlobeCom)..

Jan Söderström

Head of the new Product Line for Cloud System, Ericsson AB

Telecom and Cloud – efficient operations and revenue growth

The Virtualization technologies are maturing fast and finding applicability also outside the IT Datacenters - where the trend started. The Network Function Virtualization initiative as started by a group of Telecom Operators is an effort to define how virtualization could be utilized in the Telecom domain. In this talk I will discuss the opportunities for Telecom operators to leverage virtualization technologies both for more efficient operations as well as a vehicle for service innovation and revenue growth.

Jan Söderström is head of the new Product Line for Cloud System within Ericsson, with the charter to build a carrier grade Cloud system for operator private and public clouds. In this capacity he leads the Ericsson strategies and product plans for Cloud Management, Cloud execution environment and Cloud Infrastructure. He previously led Ericsson's worldwide IP and Cloud research, with eight research groups in six countries. He developed the companies SDN and Cloud (OpenStack) strategies during a three year assignment in Silicon Valley. Jan has 25 years of experience of telecom and IP working in different roles mostly at Ericsson. He holds a Ph.D. in Applied Physics.

Dražen Lučić

President of Council, HAKOM

Encouraging Investments In The Next Generation Networks – The Role of Croatian Post and Electronic Communications Agency

Next Generation Networks (NGN), including Next Generation Access (NGA), IP Multimedia System (IMS), Long Term Evolution (LTE), etc. are the base for further electronic communications market development. National regulatory bodies have to accelerate the investments in the new technologies within their areas of responsibility. Croatian Post and Electronic Communications Agency (HAKOM) has contributed to increase of investments in Croatian electronic communications market by means of regulatory decisions, award of "digital dividend" and technology neutral licences for radiofrequency spectrum, state aid program for broadband development in rural areas and by the project "Looking to Future". Fully alignment to the new EU regulatory framework a long time before accession date to EU has been one of significant preconditions for swift and successful incorporation of Croatian electronic communications market into EU "Single market".

Dražen Lučić is the president of Croatian Post and Electronic Communications Agency (HAKOM) Council since 2013. Previously served as HAKOM's Executive Director from 2009. Before joining HAKOM, Mr. Lučić worked at Ericsson in Croatia, Western Europe and Israel at R&D department for more than 20 years, rising from engineer in R&D department to senior sales director of one of the global telecommunication networks operators. Speaks English, German, Spanish and Swedish.

Darko Parić

Deputy minister of administration for e-Croatia, Croatia

IT in public government and directions for further development

TECHNICAL PROGRAM: SPECIAL SESSIONS, SYMPOSIUM

Wednesday, September 18, 14:30-16:00,
(PENKALA II)

SS1/I: SPECIAL SESSION ON RFID TECHNOLOGIES & THE INTERNET OF THINGS

Symposium organizer: Luigi Patrono, University of Salento, Italy
Symposium chair: Luigi Patrono, University of Salento, Italy

Middleware solutions in WSN: the IoT oriented approach in the ICSI project
Andrea Azzarà, Stefano Bocchino (Scuola Superiore Santa Anna, Consorzio Nazionale Interuniversitario per le Telecomunicazioni, Italy); Paolo Pagano, Giovanni Pellerano, Matteo Petracca (National Laboratory of Photonic Networks, Consorzio Nazionale Interuniversitario per le Telecomunicazioni, Italy)

Design and analysis of UHF RFID tag for a rubber transmission belt based on 3D electrical model
Kelash Kanwar (Fraunhofer ENAS-ASE & University of Paderborn, Germany); Volker Geneiss (Fraunhofer ENAS, Germany); Thomas Mager (University of Padeborn, Germany); Ulrich Ballhausen (Arntz Optibelt Group, Germany); Christian Hedayat (Fraunhofer Institute ENAS, Germany); Ullrich Hilleringmann (University Paderborn, Germany); Stephan Scheele (Arntz Beteiligungs GmbH & Co. KG, Germany

A novel architecture enabling the visual implementation of Web of Things applications
Luca Mainetti, Vincenzo Mighali (University of Salento, Italy); Silvio Lucio Oliva (STMicroelectronics, Italy); Luigi Patrono, Piercosimo Rametta (University of Salento, Italy)

Monitoring of RFID Failures Resulting from LLRP Misconfigurations
Rafik Kheddam, Oum-El-Kheir Aktouf, Ioannis Parissis (Grenoble INP - LCIS, France); Sanaa Boughazi (Toulouse III Paul Sabatier University, France)

Wednesday, September 18, 14:30-16:00,
(PENKALA I)

SS2/I: SPECIAL SESSION ON AD-HOC AND SENSOR NETWORKS

Special session organizer: Joel J. P. C. Rodrigues, Instituto de Telecomunicações, University of Beira Interior, Portugal
Special session chair: Joel J. P. C. Rodrigues, Instituto de Telecomunicações, University of Beira Interior, Portugal

Overview and Benchmarks of Pragmatic Debugging Techniques for Wireless Sensor Networks
Marcin Brzozowski (IHP, Germany); Peter Langendoerfer (IHP Microelectronics, Germany)

Geographical Forwarding Scheme with Location Verification for Vehicular Ad Hoc Networks
Chun-Chih Lo, Shen-Chien Chen, Yau-Hwang Kuo (National Cheng Kung University, Taiwan)

Wednesday, September 18, 16:30-18:00,
(PENKALA II)

SS1/II: SPECIAL SESSION ON RFID TECHNOLOGIES & THE INTERNET OF THINGS

Symposium organizer: Luigi Patrono, University of Salento, Italy
Symposium chair: Luigi Patrono, University of Salento, Italy

The use of NFC and Android technologies to enable a KNX-based Smart Home
Gabriele De Luca, Paolo Lillo, Luca Mainetti, Vincenzo Mighali, Luigi Patrono, Ilaria Sergi (University of Salento, Italy)

Towards Context-Aware Mobile Services Through the use of Hierarchical Temporal Memory
Rolland Vida, András Kalmár (Budapest University of Technology and Economics, Hungary)

Performance Evaluation of end-to-end security protocols in an Internet of Things
Antonio De Rubertis, Luca Mainetti, Vincenzo Mighali (University of Salento, Italy); Stefano Pascali (STMicroelectronics, Italy); Luigi Patrono, Ilaria Sergi, Maria Laura Stefanizzi (University of Salento, Italy)

Wednesday, September 18, 16:30-18:00,
(PENKALA I)

SS2/II: SPECIAL SESSION ON AD-HOC AND SENSOR NETWORKS

Special session organizer: Joel J. P. C. Rodrigues, Instituto de Telecomunicações, University of Beira Interior, Portugal
Special session chair: Joel J. P. C. Rodrigues, Instituto de Telecomunicações, University of Beira Interior, Portugal

LIRA: A New Key Deployment Scheme for Wireless Body Area Networks
Tonko Kovacevic (Tijardoviceva 22, Croatia); Toni Perkovic, Mario Cagalj (FESB, University of Split, Croatia)

Detecting Sybil Attack based on State Information in Underwater Wireless Sensor Networks
Xun Li, Guangjie Han, Aihua Qian (Hohai University, P.R. China); Lei Shu (Guangdong University of Petrochemical Technology, P.R. China); Joel J. P. C. Rodrigues (Instituto de Telecomunicações, University of Beira Interior, Portugal)

DTN Routing Protocols on Resource Constrained Devices: Design, Implementation and First Experiments
Khalil Massri (SAPIENZA Università di Roma, Italy); Andrea Vitaletti (DIS Sapienza Universita' di Roma, Italy)

Distributed Parallelization of Greedy Mobile Network Optimization Algorithms
Yuanzhou Ye, José O. Cadenas (University of Reading, United Kingdom); Graham Megson (University of Westminster, London, United Kingdom)

Thursday, September 19, 9:00-10:30, (PENKALA II)

SS3/I: SPECIAL SESSION ON GREEN NETWORKING

Special session organizers: Antonio Capone, Politecnico di Milano, Josip Lorincz, University of Split, Croatia
Special session chair: Josip Lorincz, University of Split, Croatia

Increasing Device Lifetime in Backbone Networks with Sleep Modes
Luca Chiaraviglio, Antonio Cianfrani, Angelo Coiro, Marco Listanti (University of Rome "La Sapienza", Italy); Josip Lorincz (University of Split, Croatia); Marco Polverini (University of Rome "La Sapienza", Italy)

Power-aware Optimization Modeling for Cost-Effective LRPON Infrastructure Deployment
Lin Lin (University of Waterloo, Canada); Bin Lin (Dalian Maritime University, P.R. China); Pin-Han Ho (University of Waterloo, Canada)

An Optimization Framework for Energy-Efficient Elastic Optical Transmission Systems
Bo Wang, Pin-Han Ho (University of Waterloo, Canada)

Energy-efficient and Low Blocking Probability Differentiated Quality of Protection Scheme for Dynamic Elastic Optical Networks
Jorge López Vizcaíno (Huawei Technologies Duesseldorf GmbH & Technische Universität Dortmund, Germany); Paola Soto, Yabin Ye (Huawei Technologies Duesseldorf GmbH, Germany); Felipe Jiménez (Telefónica I+D, Spain); Peter Krummrich (TU Dortmund & Lehrstuhl fuer Hochfrequenztechnik, Germany)

Thursday, September 19, 15:30-17:00, (ZLARIN)

SS3/II: SPECIAL SESSION ON GREEN NETWORKING

Special session organizers: Antonio Capone, Politecnico di Milano, Josip Lorincz, University of Split, Croatia
Special session chair: Josip Lorincz, University of Split, Croatia

Performance of mobile relay assisted networks
Tamas Patocskai, Peter Fazekas (Budapest University of Technology and Economics, Hungary)

Green Distributed Antenna Systems: Optimized Design and Upper Bound for Energy Efficiency
Mikhail Popov (Acreo AB, Sweden); David Peinado, Mats Nilson, Anders Västberg (Royal Institute of Technology (KTH), Sweden); Tord Sjölund (MIC Nordic AB, Sweden)

Communication Network-Centric Smart Grid Services
Heiko Lehmann, Christoph Lange (Deutsche Telekom AG, Germany); Ralph Schlenk (Alcatel-Lucent, Germany); David Prantl (JouleX GmbH, Germany); Michael Schlosser (Fraunhofer-Institute for Telecommunications Heinrich-Hertz-Institut, Germany); Tobias Jungel (EICT GmbH, Germany)

A Hybrid Green Policy for Admission Control in Web-based Applications
Fawaz AL-Hazemi (Korea Advanced Institute of Science and Technology, Korea)

Thursday, September 19, 9:00-10:30, (PENKALA I)

SS4: SPECIAL SESSION ON SMART ENVIRONMENT TECHNOLOGIES

Special session organizers: Mladen Russo, Maja Stella, University of Split, Croatia
Special session chair: Mladen Russo, Maja Stella, University of Split, Croatia

Seamless Connectivity Platform Architecture for Public Transportation
Zsuzsanna Ilona Kiss, Andrei Bogdan Rus, Virgil Dobrota (Technical University of Cluj-Napoca, Romania); Angelo Consoli (Eclexys SAGL, Switzerland); Miguel Egido (GOWEX Group, Spain); Zsolt Alfred Polgar (Technical University of Cluj-Napoca, Romania)

Smart city, a model and an architecture of a real project: SensorNet
Stefania Nanni (Lepida SpA, Italy); Gianluca Mazzini (University of Ferrara and LepidaSpA, Italy)

A Power Efficient Pedestrian Touring Scheme based on Sensor-assisted Positioning and Prioritized Caching for Smart Mobile Devices
Chung-Ming Huang (National Cheng Kung University, Taiwan); Chao-Hsien Lee (National Taipei University of Technology, Taiwan); Wei-Shuang Chen (National Cheng Kung University, Taiwan)

An EPC-based middleware enabling reusable and flexible mixed reality educational experiences
Alessandro Fiore, Luca Mainetti, Luigi Patrono, Roberto Vergallo (University of Salento, Italy)

Thursday, September 19, 15:30-17:00, (PENKALA I)

SYM1/I: SYMPOSIUM ON ENVIRONMENTAL ELECTROMAGNETIC COMPATIBILITY

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

Sensitivity Analysis to Epileptic Sources in Electro- and Magnetoencephalography
Alexander Hunold (Ilmenau University of Technology, Germany); Michael Funke (University of Texas Healthsciences, USA); Roland Eichardt, Jens Haueisen (Technical University Ilmenau, Germany)

A Simple Antenna Model of the Human Nerve
Dragan Poljak, Silvestar Sesnic (University of Split, Croatia)

Low Radiation Paths in Wireless Networks Pass Along Voronoi Diagram
Tigran Tonoyan, Hakob Aslanyan, Jose Rolim (University of Geneva, Switzerland)

Exposure to EM field from DVB-T transmitter

Luka Juricev-Sudac, Kresimir Malaric (University of Zagreb, Croatia)

Friday, September 20

Friday, September 20, 8:30-10.00, (PIANO HALL)

SS5/I: SPECIAL SESSION ON QOS IN WIRED AND WIRELESS NETWORKS

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

End-to-end QoS Management Across LTE Networks
Géza Horváth (Budapest University of Technology and Economics, Hungary)

Quality-of-Service in Machine-to-Machine Service Provisioning Process
Stjepko Zrncic, Iva Bojic, Damjan Katusic, Pavle Skocir, Mario Kusek, Gordan Jezic (University of Zagreb, Croatia)

Improving QoS by Predictive Channel Quality Feedback for LTE
Xiang Xu, Mingjian Ni, Rudolf Mathar (RWTH Aachen University, Germany)

Friday, September 20, 8:30-10.00, (KRAVATA)

SYM1/II: SYMPOSIUM ON ENVIRONMENTAL ELECTROMAGNETIC COMPATIBILITY

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

Biological tissues dispersivity and power loss density in transcranial magnetic stimulation
Hartmut Brauer, Konstantin Porzig, Hannes Toepfer (Ilmenau University of Technology, Germany)

Computation of SAR in the Simplified Model of a Pregnant Woman Exposed to RF Radiation from 10 MHz to 1800 MHz
Zlatko Zivkovic, Ema Vujevic, Dragan Poljak (University of Split, FESB, Croatia); Khalil El Khamlichi Drissi (Universite Blaise Pascal & LASMEA Laboratory, France); Antonio Sarolic (University of Split, FESB, Croatia)

An algorithm for processing the measurement results of electromagnetic field near 2G and 3G base stations in Albanian territory
Sanije Cela, Bexhet Kamo, Shkelzen Cakaj, Qani Muka, Rozeta Miho Mitrushi (Polytechnic University of Tirana, Albania)

Numerical approach for separation and movement of the fingers of the HUGO model for analysis of SAR distribution
Marija Vuchkovikj (Graduate School of Computational Engeneering, Germany); Irina Munteanu (CST AG, Germany); Thomas Weiland (Technische Universitaet Darmstadt, Germany)

Friday, September 20, 10:30-12.00, (PIANO HALL)

SS5/II: SPECIAL SESSION ON QOS IN WIRED AND WIRELESS NETWORKS

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

An Efficient Handover Decision Making for Heterogeneous Wireless Connectivity Management
Sassi Maaloul, Mériem Afif , Sami Tabbane (Carthage University, Tunisia)

A SPIT Detection Algorithm Based on User's Call Behavior
Randa Jabeur Ep Ben Chikha (University of Carthage, Tunisia); Tarek Abbes (Higher School of Telecommunications, Tunisia); Adel Bouhoula (Higher School of Communication of Tunis & University of Carthage, Tunisia)

Enhancement to Seamless Vertical Handover in a Micro-mobility Domain
Linoh A. Magagula (Tshwane University of Technology, Swaziland); Sabelo V. Dlamini (Telkom, South Africa)

Friday, September 20, 10:30-12.00, (KRAVATA)

SYM1/III: SYMPOSIUM ON ENVIRONMENTAL ELECTROMAGNETIC COMPATIBILITY

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

High Frequency Grounding Studies - Image and Transmission Line Models vs. Electromagnetic Model
Vesna Arnautovski-Toseva, Leonid Grcev, Marija Kacarska (University Ss. Cyril and Methodius-Skopje, Macedonia)

Increasing the Radiation Efficiency and Resistance of Electrically Small Spherical Helical Antenna for Wireless Power Transfer
Maja Škiljo, Zoran Blažević (University of Split, Croatia)

EMC Analysis of the Narrowband PLC System Based on the Antenna Theory
Vicko Doric (University of Split, Croatia); Ivica Hadjina (HEP ODS d.o.o., Croatia); Dragan Poljak (University of Split, Croatia); Khalil El Khamlichi Drissi (Universite Blaise Pascal & LASMEA Laboratory, France)

Electromagnetic Disturbances in Conductive Structures nearby Transmitting Antennas
Vesna Javor (University of Nis, Faculty of Electronic Engineering, Serbia); Milan Šaranac (Faculty of Electronic Engineering, Serbia)

TECHNICAL PROGRAM: GENERAL CONFERENCE

Wednesday, September 18

Wednesday, September 18, 9:00-10:30, (PENKALA II)

S1: SIGNAL PROCESSING AND CODING

Chair: Hrvoje Dujmic, University of Split, Croatia

Configurable Low Complexity Decoder Architecture for Quasi-Cyclic LDPC codes
Sherif Mohammad (Varkon Semiconductors & Nile University, Egypt); Ahmed Sayed (HD, Egypt); Rafik Guindi (Nile University, Egypt)

Performance of PSO and SA Assisted Joint Scheme of Channel Estimation and PPIC in MIMO-SDMA/OFDM Over-loaded System
Islam E. Shaalan (Port Said University, Egypt); Khairy A. Elbarbary (Suez Canal University, Egypt); Ahmed A. S. Dessouki (Port Said University, Egypt); Mohamed S. Abo El-Soud (Sinai University, Egypt)

Modeling and analysis of the impact of nTMS on the EMG signal of laryngeal muscles
Zoran Vulević, Mirjana Bonkovic, Maja Čić (University of Split, Croatia)

Application of EEMD-ICA algorithm to EMG signals laryngeal muscles
Tomislav Juric, Mirjana Bonkovic, Maja Rogic (University of Split, Croatia)

Glyph Recognition by Pattern Matching with On-the-fly Generated Patterns
Ursina Caluori (Swiss Federal Laboratories for Materials Testing and Research (EMPA), Switzerland); Klaus Simon (EMPA, Switzerland)

Wednesday, September 18, 9:00-10:30, (PENKALA I)

S2: MOBILE AND WIRELESS COMMUNICATIONS

Chair: Piotr Tyczka, Poznan University of Technology, Poland

D2D for Energy Efficient Communications in Disaster and Emergency Situations
Mythri Hunukumbure, Tim Moulsley (Fujitsu Laboratories of Europe, United Kingdom); Ade Oyawoye (University of Surrey, United Kingdom); Sunil Vadgama, Mick Wilson (Fujitsu Laboratories of Europe, United Kingdom)

A Robust LT-Codes-based P2P Multicast System for Video Streaming over Wireless Networks
Gyeongbin Gong, Oh Chan Kwon, Hwangjun Song (POSTECH (Pohang University of Science and Technology), Korea)

Performance of Reduced-Complexity Decoding Algorithms for Turbo TCM Signals in Rayleigh Fading Channels
Piotr Tyczka (Poznan University of Technology, Poland)

Wednesday, September 18, 9:00-10:30, (KRAVATA)

S3: COMMUNICATIONS SOFTWARE

Chair: Zoran Skocir, University of Zagreb, Croatia

Operating System Upgrade in High Availability Environment
Ekansh Katihar (Concordia University, Canada); Maria Toeroe (Ericsson, Canada); Ferhat Khendek (Concordia University, Canada)

Inter-module data sharing for flexible wireless MAC
Pierpaolo Loreti, Riccardo Paolillo, Claudio Pisa, Michele Orrù, Giuseppe Bianchi (University of Rome "Tor Vergata", Italy)

Building a new CTL model checker using Web Services
Florin Stoica, Laura Stoica (Lucian Blaga University of Sibiu, Romania)

Wednesday, September 18, 11:00-12:30, (PENKALA II)

S4: INFORMATION INFRASTRUCTURE AND SECURITY

Chair: Mario Cagalj, University of Split, Croatia

Using Ant Colony Optimization Metaheuristic and Dynamic Time Warping for Anomaly Detection
Luiz F. Carvalho (State University of Londrina, Brazil); Joel J. P. C. Rodrigues (Instituto de Telecomunicações, University of Beira Interior, Portugal); Sylvio Barbon Junior, Mario Lemes Proença Jr. (State University of Londrina, Brazil)

A Hybrid Approach for Anomaly Detection on Large-scale Networks using HWDS and Entropy
Marcos V. O. de Assis (State University of Londrina, Brazil); Joel J. P. C. Rodrigues (Instituto de Telecomunicações, University of Beira Interior, Portugal); Mario Lemes Proença Jr. (State University of Londrina, Brazil)

Security Architecture for Mobile E-Health Applications in Medication Control
Fabio Goncalves, Joaquim H Macedo, Maria João M. R. da C. Nicolau, Alexandre Santos (University of Minho, Portugal)

Wednesday, September 18, 11:00-12:30, (PENKALA I)

S5: INTERFACES AND COMMUNICATION PROTOCOLS

Chair Luigi Patrono, University of Salento, Italy

Improved mathematical model of simplified Constrained Priority Countdown Freezing protocol
Ante Kristic, Julije Ozegovic, Ivan Kedzo (University of Split, Croatia)

Contention Overhead - Adaptive Binary Priority Countdown Protocol
Ivan Kedzo, Julije Ozegovic, Ante Kristic (University of Split, Croatia)

A Collaborative Schedule for IPTV
Elisa Benetti (LepidaSpA, Italy); Gianluca Mazzini (University of Ferrara and LepidaSpA, Italy)

Wednesday, September 18, 11:00-12:30,
(KRAVATA)

S6: TELECOMMUNICATIONS SERVICES AND QOS

Chair: Julije Ozegovic, University of Split, Croatia

Optimization of P2P-TV Traffic by Means of Header Compression and Multiplexing
Idelkys Quintana-Ramirez, Jose Saldana, José Ruiz-Mas, Luis Sequeira, Julián Fernández-Navajas, Luis Casadesus, Sr. (University of Zaragoza, Spain)

Disjoint Paths Pair Computation Procedure for SDH/SONET Networks
Ahmad Osmani Mohammad Hassan, Jörn Altmann (Seoul National University, Korea)

TIMETABLE A: TECHNICAL PROGRAM, WORKSHOPS

Hotel Zora, Primosten, Wednesday, September 18

Time/Hall	PENKALA II	PENKALA I	KRAVATA
09:00–10:30	S1: Signal Processing and Coding	S2: Mobile and Wireless Communications	S3: Communications Software
10:30–11:00	Coffee Break		
11:00–12:30	S4: Information Infrastructure and Security	S5: Interfaces and Communication Protocols	S6: Telecommunications Services and QoS
12:30–13:00	**Invited talk (KRAVATA):** Joel Rodrigues, *New Frontiers for Mobile Health*		
13:00–14:30	Lunch		
14:30–16:00	SS1/I: Special Session on RFID technologies & the Internet of things	SS2/I: Special Session on Ad-Hoc and Sensor Networks	WICT/I: Workshop on Information and Communication Technologies I
16:00–16:30	Coffee Break		
16:30–18:00	SS1/II: Special Session on RFID technologies & the Internet of things	SS2/II: Special Session on Ad-Hoc and Sensor Networks	WICT/II: Workshop on Information and Communication Technologies II

Hotel Zora, Primosten - Split, Thursday, September 19

Time/Hall	PENKALA II	PENKALA I	
09:00–10:30	SS3/I: Special Session on Green Networking	SS4: Special Session on Smart Environment Technologies	
10:30–11:30	Coffee Break		
11:30–13:00	**OPENING CEREMONY (KRAVATA)**		
	Keynote speech: J. Söderström, *Telecom and Cloud – efficient operations and revenue growth*		
13:00–15:00	**Conference Luncheon**		
15:00–15:30	**Invited talk (PENKALA I):** Abdelhamid Mellouk, *Quality of Experience vs. Quality of Service : Application for a CDN Architecture*		
15:30–17:00	SS3/II: Special Session on Green Networking (ZLARIN)	SYM 1/I: Symposium on Environmental Electromagnetic Compatibility (PENKALA I)	WICT/III: Workshop on Information and Communication Technologies III (KRAVATA)
17:00–17:30	Coffee Break		
18:00	**Bus Transfer to Split**		
19:00–20:30	**Guided Tour in Split**		
20:30–21:30	**Welcome Party in Split** *(Diocletian Palace Basement)*		
21:30	**Bus Transfer to Primosten**		

Hotel Zora, Primosten - Split, Friday, September 20

Time/Hall	PIANO HALL	KRAVATA	TESLA
08:30–10:00	SS5/I: Special Session on QoS in Wired and Wireless Networks	SYM 1/II: Symposium on Environmental Electromagnetic Compatibility	Poster Session I
10:00–10:30	Coffee Break		
10:30–12:00	SS5/II: Special Session on QoS in Wired and Wireless Networks	SYM 1/III: Symposium on Environmental Electromagnetic Compatibility	Poster Session II
12:00–13:00	Lunch		
13:00–18:00	**Conference Trip and Dinner**		

* Registration: Wednesday (08:00 – 12:30), (14:30 – 18:30), Thursday (08:00 – 11:00), (15:00 – 17:30), Friday (08:00 – 11:30)

TIMETABLE B: WORKSHOPS, TUTORIALS, BUSINESS FORUM, MEETINGS

Hotel Zora, Primosten, Wednesday, September 18	
Time/Hall	**PIANO HALL**
09:00–10:30	Tutorial T1 (P. Lorenz) *IP-Oriented QoS and QoE in the Next Generation Networks: application to wireless networks - I*
10:30–11:00	Coffee Break
11:00–12:30	Tutorial T1 (P. Lorenz) *IP-Oriented QoS and QoE in the Next Generation Networks: application to wireless networks - II*
12:30–13:00	**Plenary talk (KRAVATA):** **Joel Rodrigues,** *New Frontiers for Mobile Health*
13:00–14:30	**Lunch**
14:30–16:00	Tutorial T4 (J. Elmirghani) *Energy Efficient Core and Content Distribution Networks - I*
16:00–16:30	Coffee Break
16:30–18:00	Tutorial T4 (J. Elmirghani) *Energy Efficient Core and Content Distribution Networks - II*

Hotel Zora, Primosten - Split, Thursday, September 19		
Time/Hall	**ZLARIN**	**TESLA**
09:00–10:30	Tutorial T2 (D. Poljak) *Computational Models in Electromagnetic Compatibility*	Tutorial T3 (O. Ur-Rehman, N. Zivic, A. Tabatabaei) *Multimedia Authentication in the Presence of Noise – I (TESLA)*
10:30–11:30	Coffee Break	
11:30–13:00	**OPENING CEREMONY (KRAVATA)**	
	Keynote speech: **J. Söderström,** *Telecom and Cloud – efficient operations and revenue growth*	
13:00–15:00	**Conference Luncheon**	
15:00–16:00	**Industry Panel (PENKALA II):** *Agile and Lean Software Development* (**A. Jouppila,** Ericsson AB)	**Invited talks (KRAVATA):** **D. Parić,** *IT in public government and directions for further development* **D. Lučić,** *Encouraging Investments In The Next Generation Networks – The Role of Croatian Post and Electronic Communications Agency*
16:00–17:30	**Workshop** on Software Engineering in Practice (D. Huljenic, Ericsson NT)	Tutorial T3 (O. Ur-Rehman, N. Zivic, A. Tabatabaei) *Multimedia Authentication in the Presence of Noise – II (TESLA)*
18:00	**Bus Transfer to Split**	
19:00–20:30	**Guided Tour in Split**	
20:30–21:30	**Welcome Party in Split** *(Diocletian Palace Basement)*	
21:30	**Bus Transfer to Primosten**	

Hotel Zora, Primosten - Split, Friday, September 20		
Time/Hall	**PENKALA II**	**PENKALA I**
08:30–10:00	WI: Workshop on Innovation in ICT	WICT/IV: Workshop on Information and Communication Technologies IV
10:00–10:30	Coffee Break	
10:30–12:00	WI: Workshop on Innovation in ICT	WESC: Ericsson Summer Camp 2013 Workshop
12:00–13:00	**Lunch**	
13:00–18:00	**Conference Trip and Dinner**	

* Registration: Wednesday (08:00 – 12:30), (14:30 – 18:30), Thursday (08:00 – 11:00), (15:00 – 17:30), Friday (08:00 – 11:30)

SoftCOM 2013 PROFESSIONAL PROGRAM: WORKSHOP

Wednesday, September 18, 14:30-16:00,
(KRAVATA)

WICT/I: WORKSHOP ON INFORMATION AND COMMUNICATION TECHNOLOGIES I

Chair: Julije Ozegovic, University of Split, Croatia

A Flexible Services and Communications Gateway for Smart Home and Monitoring Applications
Marco Goetze, Wolfram Kattanek, Rolf Peukert, Elena Chervakova (IMMS - Institut für Mikroelektronik- und Mechatronik-Systeme gGmbH, Germany); Hannes Töpfer (TU Ilmenau, Germany); Peter Dietrich (Helmholtz Centre for Environmental Research - UFZ, Germany); Jan Bumberger (Helmholtz Centre for Environmental Research - UFZ, Germany)

School and connectivity: from the needs to the services (Part 2)
Daniele Migliorini, Enrica Salbaroli (Lepida SpA, Italy); Gianluca Mazzini (University of Ferrara and LepidaSpA, Italy)

School and connectivity: from the needs to the services (Part 1)
Enrica Salbaroli, Daniele Migliorini (Lepida Spa, Italy); Gianluca Mazzini (University of Ferrara and LepidaSpA, Italy)

A Data Service Gateway for the Emergency Regional Digital Network
Chiara Taddia, Gianluca Mazzini (University of Ferrara and LepidaSpA, Italy)

Handover in heterogeneous wireless networks
Ivan Culic (Ministry of the Interior, Croatia); Dinko Begusic (Split University, Croatia)

Wednesday, September 18, 16:30-18:00,
(KRAVATA)

WICT/II: WORKSHOP ON INFORMATION AND COMMUNICATION TECHNOLOGIES II

Chair: Zoran Skocir, University of Zagreb, Croatia

A Multi Server Architecture for an Open Source Centralized Video Management Service
Chiara Taddia, Gianluca Mazzini (University of Ferrara and LepidaSpA, Italy)

Međuslojno QoS upravljanje kognitivnih mreža (Cognitive network Cross-layer QoS manager)
Ivana Ramljak (University of Mostar, Bosnia and Herzegovina). Josko Radic (University of Split, Croatia)

Poboljšanje QoS temeljeno na prognoziranju prometa u kognitivnim mrežama (QoS enhancement based on traffic forecasting in cognitive networks)
Ivana Ramljak (University of Mostar, Bosnia and Herzegovina), Matko Saric (University of Split, Croatia)

Template Matching Technique for Image Object Recognition
Marina Prvan, Matko Saric, Nikola Rožić (University of Split, Croatia)

Thursday, September 19, 15:30-17:00, (KRAVATA)

WICT/III: WORKSHOP ON INFORMATION AND COMMUNICATION TECHNOLOGIES III

Chair: Milutin Kapov, University of Split, Croatia

A Case Study of Recent Mifare Classic Field Deployments From an (In-)Security Perspective
Stefan Alfredsson (Karlstad University, Sweden)

Značaj odnosa s javnostima i pozitivnog imidža telekom operatera u vremenima krize
Igor Jurčić (HT Eronet, Bosnia and Herzegovina)

Oglašavanje proizvoda i usluga s posebnim osvrtom na oglašavanje u telekomunikacijskom sektoru
Igor Jurčić (HT Eronet, Bosnia and Herzegovina)

RFID technology based object tracking system
Matea Bozic-Kudric, Petar Šolić, Nikola Rožić (University of Split, Croatia)

Friday, September 20, 8:30-10:00, (PENKALA I)

WICT/IV: WORKSHOP ON INFORMATION AND COMMUNICATION TECHNOLOGIES IV

Chair: Milutin Kapov, University of Split, Croatia

Two New Families of Simple Trans-control Codes
Peter Farkaš (Slovak University of Technology, Slovakia); Eugen Ružický (Pan-European University, Slovakia)

Influence of wireless communications in e- learning
Tomislav Volarić (University of Mostar, Bosnia and Herzegovina)

Real-time protocols in interactive communication
Tomislav Volarić (University of Mostar, Bosnia and Herzegovina)

Hybrid Optical/Wireless Access Networks
Damir Breskovic (University of Split & T-Hrvatski Telekom, Croatia)

Optical Access Networks Architecture
Damir Breskovic (University of Split & T-Hrvatski Telekom, Croatia)

POSTER SESSION

Chair: Mladen Russo, Maja Stella, University of Split, Croatia

OCEAN CDNi - Exploiting analogies to IP request routing for efficient CDN interconnection framework
Cornelius Hellge (Fraunhofer Institute for Telecommunications - Heinrich-Hertz-Institute, Germany); Yannick Le Louedec, Ali Gouta (Orange Labs, France)

Technical and Semantic Interoperability towards European e-Prescriptions in Croatian Pharmacies
Tatjana Prenđa Trupec, Hrvoje Belani, Igor Ljubi (Croatian Health Insurance Fund, Croatia); Tihana Govorčinović (Croatian Chamber of Pharmacists, Croatia)

Pascal Lorenz

University of Haute Alsace, France

IP-Oriented QoS and QoE in the Next Generation Networks: application to wireless networks

Abstract: Emerging Internet Quality of Service (QoS) mechanisms are expected to enable wide spread use of real time services such as VoIP and videoconferencing. The "best effort" Internet delivery cannot be used for the new multimedia applications. New technologies and new standards are necessary to offer Quality of Service (QoS) for these multimedia applications. Therefore new communication architectures integrate mechanisms allowing guaranteed QoS services as well as high rate communications.The service level agreement with a mobile Internet user is hard to satisfy, since there may not be enough resources available in some parts of the network the mobile user is moving into. The emerging Internet QoS architectures, differentiated services and integrated services, do not consider user mobility. QoS mechanisms enforce a differentiated sharing of bandwidth among services and users. Thus, there must be mechanisms available to identify traffic flows with different QoS parameters, and to make it possible to charge the users based on requested quality. The integration of fixed and mobile wireless access into IP networks presents a cost effective and efficient way to provide seamless end-to-end connectivity and ubiquitous access in a market where the demand for mobile Internet services has grown rapidly and predicted to generate billions of dollars in revenue. This tutorial covers to the issues of QoS provisioning in heterogeneous networks and Internet access over future wireless networks as well as ATM, MPLS, DiffServ, IntServ frameworks. It discusses the characteristics of the Internet, mobility and QoS provisioning in wireless and mobile IP networks. This tutorial also covers routing, security, baseline architecture of the inter-networking protocols and end to end traffic management issues.

Biography: Pascal Lorenz *(lorenz@ieee.org) received his M.Sc. (1990) and Ph.D. (1994) from the University of Nancy, France. Between 1990 and 1995 he was a research engineer at WorldFIP Europe and at Alcatel-Alsthom. He is a professor at the University of Haute-Alsace, France, since 1995. His research interests include QoS, wireless networks and high-speed networks .He is the author/co-author of 3 books, 2 patents and 200 international publications in refereed journals and conferences.He was Technical Editor of the IEEE Communications Magazine Editorial Board (2000- 2006), Chair of Vertical Issues in Communication Systems Technical Committee Cluster (2008-2009) and Modeling Technical Committee (2003-2009) and Chair of the Communications Software Technical Committee (2008-2010). He has been Co-Program Chair of ICC'04 and symposium Co-Chair at Globecom 2009-2007 and ICC 2009-2008. He has served as Co-Guest Editor for special issues of IEEE Communications Magazine, Networks Magazine, Wireless Communications Magazine, Telecommunications Systems and LNCS. He is senior member of the IEEE and member of many international program committees. He has organized many conferences, chaired several technical sessions and gave tutorials at major international conferences.*

Dragan Poljak

University of Split, Croatia

Computational Models in Electromagnetic Compatibility

Abstract: The tutorial starts with some general aspects of modeling EMC modeling. The introduction ooutlines some commonly used analytical and numerical methods, respectively. The participants will then be given a crash-course on the wire antenna theory and related numerical solution methods for the treatment of integral equations in both frequency and time domain. Some applications of these models related to dipole antennass, Yagi-Uda arrays and logarithmic-periodic dipole antennas (LPDA) will be presented. In addition, full wave (antenna) models for several configurations of thin wires, from rather simple to realistic complex structures, followed by the analysis of overhead and buried lines, respectively, which will be carried out. The results obtained by using the rigorous full wave models will be compared to approximate transmission line (TL) approach. In particular, an attention will be focused to the analysis of PLC (Power Line Communications) configurations and modeling of lightning channel. Then, the transient analysis of realistic grounding systems with particular emphasis to wind turbines will be carried out. The last part of the tutorial deals with the assessment of human exposure to non-ionizing radiation. Low frequency, frequency and transient exposures will be covered. Finally, some biomedical applications of electromagnetic fields will be presented.

Biography: *Dragan Poljak was born on 10 October 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 modelling of wire antenna structures, and numerical modelling 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 many WIT International Conferences. He is also editor of the WIT Press Series Advances in Electrical Engineering and Electromagnetics. In 2011 professor Poljak became a member of WIT Bord of Directors. In June 2004 professor Poljak was awarded by the National Prize for Science.*

Obaid Ur-Rehman, Natasa Zivic, Amir Tabatabaei

Chair for Data Communications Systems, University of Siegen, Germany

Multimedia Authentication in the Presence of Noise

Abstract: Multimedia communications is ubiquitous in today's digital world. Communication over public networks is prone to well known security problems, such as data forgery, e.g., insertion or deletion of object into an image. One of the ways to protect against such attacks is to use standard cryptographic mechanisms such as message authentication codes (MAC). Such codes detect even minor modifications in the data they protect and thus enable the receiver to reject the falsified information. Due to the nature of the underlying transmission channels, multimedia data, such as text, audio or video, might be received in error. In certain cases, such as in uni-directional or real time communications, it is not possible to use networking protocols which guarantees data delivery using retransmissions. In order to be able to detect forgeries, but at the same time accept minor changes to the multimedia data (e.g., images), new cryptographic MACs are needed. Such new MACs should be able to tolerate minor unintentional modifications in the data and at the same time identify the intentional forgeries. These MACs can be based on the actual multimedia data or on the features extracted from the original data. Such authentication algorithms can be called in general as the approximate or noise tolerant message authentication codes.This tutorial focuses on the design of such message authentication algorithms. The first algorithm is based on image authentication using Noise Tolerant Message Authentication Codes (NTMAC) and feature extraction techniques based on Discrete Cosine Transform (DCT). An image is split into different blocks and each block is authenticated using the DCT of that block. Using a different permutation sequence increases or decreases the security of the proposed algorithm. The images are "approximate authenticated", errors in the images are localized and a correctable number of errors are corrected using error correcting codes such as Turbo codes. An improved version of this algorithm is based on the concept of weights assigned to the important parts of the images, e.g., the DC component of the DCT of each block is more important than other (AC) components. The idea of approximate image authentication is further refined using standard Message Authentication Codes (MACs) combined with error correcting codes (Reed Solomon codes) and feature extraction based on the Discrete Wavelet Transform (DWT). The authentication tag is generated based on the encrypted encoded message and the MAC of the whole image. A certain number of errors are corrected using Reed Solomon codes before tag verification and then the approximate authentication is performed.These algorithms will be discussed together with their mathematical security analysis, to show their strengths and limitations.

Biography: *Obaid Ur-Rehman is a researcher and post doctoral fellow at the University of Siegen, Germany. His main interests are in error correcting codes and computer and network security. Dr.-Ing Ur-Rehman received his M.Sc. degree in 2004 in Computer Engineering from the Faculty of Electrical Engineering, University of Engineering and Technology, Taxila. He received his Dr.-Ing degree from the University of Siegen, Germany in 2012, where he worked on soft decoding techniques for error correcting codes and their applications in various fields such as message authentication codes in presence of noise. He continued his work as at a post doctoral position in the same institute. Dr.-Ing Ur-Rehman has more than 6 years of industrial experience together with a few years of academic experience. He is author of various scientific papers in international conferences and journals. He also serves as the reviewer of many international journals.*

Natasa Zivic is an Assistant Professor and a Private Docent at the University of Siegen. She works as a lecturer at the University of Siegen since 2007, teaching Basics of Communication Techniques, Digital Communications Technologies I and Digital Communications Technologies II. Dr.-Ing. habil. Natasa Zivic received Dipl.- Ing. Degree (1999) and a Magister degree (2002) from the Faculty of Electrical Engineering at the University of Belgrade, Serbia. She started her research at the Chair for Data Communications Systems at the University of Siegen, Germany in October 2004. She received Dr.-Ing. Degree from the University Siegen, Faculty for Electrical and Computer Engineering in 2007 and continued her work as a lecturer and as a postdoctoral candidate. She defended her Postdoctoral Degree (Habilitation) in area of Electrical Engineering and Telecommunications from the University Siegen in 2012. Her actual areas of interest are connection between cryptography and standard communication techniques like channel coding, and applying of cryptography in communications, especially in noisy environments. She has published about 100 journal and conference papers, 2 monographs and 3 patents (2 in Germany and 1 in USA). She works as a member of the German national body in ISO and as a project editor of security standards. She served as a TPC member and an organizer of several IEEE conferences/workshops and as a technical reviewer of several IEEE and other journals. She is a member of IEEE and IEEE Communication Society.

Amir Tabatabaei received his B.Sc. and M.Sc. degrees in applied and computational mathematics from University of Tehran and University of Tarbiat Modares, Tehran, Iran. He became a part time lecturer and faculty member in Sadra University in Tehran from 2001 till 2009. From 2004 till 2009 he worked as a researcher in the field of cryptography and more specially cryptanalysis in some reputed R&D departments in electrical industries. He carried out some important national projects in cryptography during this period. He continued his graduate studies from December 2009 in Canada and Siegen, Germany. Since December 2010, he is working as a research assistant and Ph.D. candidate at the Chair for Data Communications Systems, University of Siegen, Germany. His current research field is design and cryptanalysis of fuzzy authentication systems for authenticating of data over noisy channels. He has been the winner of some scholarships and he has several publications in reputed journals and conferences in the field of applied mathematics and cryptography.

Jaafar Elmirghani

University of Leeds, UK

Energy Efficient Core and Content Distribution Networks

Abstract: Energy efficiency is increasingly becoming a key priority for Information and Communication Technology (ICT) organizations given the ecological and economic drivers. In this tutorial we will introduce and discuss a number of measures that can be used to reduce the power consumption in the Internet and will introduce methods for the optimum use of renewable energy in core networks to reduce the Internet's carbon footprint at a given power consumption level. We will introduce network optimization through the use of mixed integer linear programming (MILP) giving a short tutorial on MILP and build on this and heuristics inspired by it to explore a number of energy and carbon footprint reduction measures including (i) Optimum use of time varying renewable energy in core networks; (ii) Optimum resource allocation and green network design with data centres; (iii) Dynamic energy-efficient content caching for video on demand, YouTube type content and IPTV (iv) Energy-efficiency through data compression; (v) Energy-efficient peer-to-peer content distribution (vi) Physical topology design considering operational and embodied energies. We will finish by outlining future directions and open research issues. This tutorial will be of particular benefit to researchers and practicing engineers interested in energy efficient designs applied to the Internet and broadly.

Biography: *Jaafar Elmirghani is a Fellow of the IET, Fellow of the Institute of Physics and is the Director of the Institute of Integrated Information Systems and Professor of Communication Networks and Systems within the School of Electronic and Electrical Engineering, University of Leeds, UK. He was Chairman of the IEEE UK and RI Communications Chapter and was Chairman of IEEE Comsoc Transmission Access and Optical Systems Committee and is and has been on the technical program committee of 29 IEEE ICC/GLOBECOM conferences between 1995 and 2012 including ten times as Symposium Chair. Prof. Elmirghani was founding Chair of the first IEEE Comsoc Green Communications track at GLOBECOM 2011. He received the IEEE Communications Society 2005 Hal Sobol award and the 2005 Chapter Achievement award, the University of Wales Swansea inaugural 'Outstanding Research Achievement Award', 2006 and the IEEE Communications Society Signal Processing and Communication Electronics outstanding service award, 2009. He is currently an editor of IET Optoelectronics, Co-Chair of the GreenTouch® Wired, Core and Access Networks Working Group. He has published over 350 technical papers, co-edited "Photonic Switching Technology- Systems and Networks", IEEE Press 1998, and has research interests in communication networks, and optical communication systems.*

BUSINESS FORUM

Thursday, September 19, 15:00 – 16:00 (PENKALA II)

INDUSTRY PANEL: AGILE AND LEAN SOFTWARE DEVELOPMENT

During the last 10+ years the lean and agile principles and practices have become the de-facto modern way of developing software intensive products and services. Lean and agile concepts describe a set of values and principles that can be applied through various methods, practices and tools. Scrum methodology is one of the most know applications of lean and agile software development. During the last years we have seen application of lean and agile not only in small-scale and non-mission critical development projects but also in large-scale system development for mission critical systems like telecommunication equipment. However, applying lean and agile concepts to large-scale system development, usually done by well-established big corporations, has exposed a number of new challenges and topics for lean and agile community to solve. Practical solutions have been emerging from various organizations and we can safely say that lean and agile properly applied can scale up to the most complicated software development challenges there are to date.

Panel will start with opening presentation by Ari Jouppila, "Introduction to Lean and Agile". Presentation will give introduction to the key concepts, principles and application of lean and agile software development. It will also bring some key experiences and learning from real life adoption of lean and agile principles to large-scale system development at Ericsson.

Moderator:

Ari Jouppila

Ericsson AB, Head of PDU Mobile Core

Ari Jouppila is currently Vice President and Head of Product Development Unit Mobile Core at Ericsson. In this position he oversees the product development of Ericsson's core networks mobile switching, signaling, machine-to-machine communication platform and regulatory solutions with around 1500 people located in 10 countries. Ari has nearly 20 years of experience in various aspects of product development from applied research, standardization, new product development, product introduction, maintenance and global customer support. During the last 5 years Ari has also played a pivotal role in the lean & agile transformation of Ericsson's global R&D.

Panel participants:

Kresimir Musa

CROZ, Consulting Services Manager

Kresimir Musa graduated and obtained master's degree on Faculty of Electrical Engineering and Computing in Zagreb. In the course of his career he was engaged in software development projects, in various roles, from developer to project portfolio manager. He has extensive practical experience in applying agile and iterative software development methods, and he has dedicated large part of his career to the realization of projects based on service oriented architectureprinciples and automated business process management. Kresimir is currently employed at company CROZ, on the position of Consulting Services Manager. In this position, among other things, he is responsible for managing a project portfolio. He is one of the co-founders of Agile Croatia association, where he is currently engaged as Secretary of the Association

Marin Bezic

Concero, Director and Owner

Marin Bezic, CEO of Concero (www.concero.hr), spent 8 years in the Microsoft headquarters in Redmond, USA, managing development of the first Microsoft business intelligence product, Analysis Services. After the Analysis Services became the market leader in the OLAP (online analytical processing) space, Marin moves to Europe to grow the Microsoft share in the Business Intelligence market in Europe, Middle East, and Africa. After 12 years in Microsoft, Marin moves back to Croatia to start a new career as an independent consultant and agile coach. Since 2009, Marin is helping IT development organizations improve their teams and processes leveraging best practices from the Microsoft product development and the industry. Marin's clients are leading regional companies in telecom, finance, and IT industries, as well as small and medium fast growing software vendors.Marin holds Masters of Science in Computer Science degree from Washington University, St. Louis, USA.

Damir Prusac

Ericsson NT, Head of Mobile Core FDC

Damir Prusac is currently Head of Feature Development Center in Ericsson Nikola Tesla d.d which is the part of Product Development Unit Mobile Core at Ericsson. In his career he has been working in different organizations across Europe working with different product lines in telecommunication portfolio from research to product development, product maintenance and customer support. He is one of the pioneers and nowadays a practitioner in Lean and Agile SW development dealing with 2G, 3G and 4G mobile networks. In the same time he is eagerly working in promotion of lean and agile principles within community and wider in society being a vice president of Agile Croatia Association!

Thursday, September 19, 16:00 – 17:30 (ZLARIN)

SECOND WORKSHOP ON SOFTWARE ENGINEERING IN PRACTICE

The software is everywhere around us. The significant growth of ICT products and solutions depends on the quality of the used software. The software is essential enabler of future usage and growth of networked society surrounded with 50 billion of connected devices. Are we ready for such mass software production and keeping the software product life cycle continuous? Are the current researches and used software engineering practice correlated and ready to take responsibility for such broad and demanding software usage? Are we ready to switch from software products to the model of software as a service?

Let's take opportunity to discuss these software engineering challenges and exchange experience between researchers and practitioners. Prepare your view and share it with others. Send to us your presentation and we shall review it, and according to the acceptance criteria and related topic call you on the workshop during the SoftCOM 2013 conference.

Dr. Darko Huljenić

Adjunct associate professor, Manager for technology & science activities, Ericsson Nikola Tesla

Dr. Darko Huljenić received his Ph.D. degrees from the University of Zagreb, Croatia, in 2001. He has been with Ericsson Nikola Tesla since 1984. His current position is Manager for Technology & Science relations. He established and led the research department at ENT till 1999 and expanded its cooperation with the major Croatian Universities as well as some international research institutions. His main interests are open network architecture, software development methodologies and service oriented architecture. Dr. Huljenic holds a position of assistant professor at the University of Zagreb, in the Faculty of Electrical Engineering and Computing, Telecommunications Department. He is also one of the establishers of the Summer Camp.

Content of the workshop:

Introduction presentation: "The role of the SW engineering due to the software usage role shift" – Darko Huljenić, Ericsson Nikola Tesla

The new paradigm shift in software usage, from software as a product going towards the software as a service. What is expected to be changed in the software engineering practice and supporting methods to follow paradigm shifts with same quality level for the system user. Discussion of ongoing research activities and correlation with an industrial practice.

"Practical experience of virtualization legacy software to make preparation for the cloud distribution" – Marin Orlić, Ericsson Nikola Tesla

Analyze of practical steps and process to prepare legacy application for virtual environment execution. Key process steps and architectural challenges will be discussed to enable functional requirements satisfaction with transferred application.

"The tools support for automatic Model Driven Development" – Nenad Ukić, Ericsson Nikola Tesla

It is a lot of ongoing activities and tools that tend to support automatic code generation based on UML model. There are additional constraints that must be covered when we talk about real-time applications and smallest amount of supporting tools and appropriate methods. It will be analyzed possibilities of RealtimeUML practice.

"SW engineering challenges in the cloud environment – an experience from EU FP7 project CloudScale" – Ivana Stupar, Ericsson Nikola Tesla

The discussion of open challenges to enable of non- cloud to the cloud based application migration based on the Model Driven Development concept. An essential tools and method support needed to enable application behavior on the model level analysis before the system is realized and deployed in the cloud environment. Special focus will be on the SaaS level of a cloud stack. Basic results and concepts from the EU FP7 project CloudScale will be discussed.

"Requirements and patterns concept alignment" – Nenad Katanić, Ericsson Nikola Tesla

For the system development the appropriate requirements collection process is essential to enable correct system design. In the Model Driven Development concept is important to enable quantitative and qualitative transformation of requirements to the appropriate architectural and design patterns. Some basic techniques to enable automatic matchmaking between requirements and patterns will be discussed.

Friday, September 20, 8:30 – 12:00 (PENKALA II)

WI: WORKSHOP ON INNOVATION IN ICT

**European Union Instrument for Pre-Accession Assistance (IPA) - SIIFII
„Technology Transfer infrastructure in Croatian Adriatic region"**

Organizers:

Faculty of electrical engineering, mechanical engineering and naval architecture

Technology Transfer Office of the University of Split

Leandra Vranješ Markić, TTO University of Split
Nikola Balić, TTO University of Split
Dinko Begušić, University of Split

The Workshop on Innovation in ICT is aimed to gather researchers, professionals, students and representatives of institutions taking part in the process of innovation in the area of Information and Communication technologies to share experiences, opinions and ideas. Participants are invited to discuss the efficiency and development of the innovation system and infrastructure.

8:30
Welcome speech
prof. Dinko Begušić, Ph.D.   Chair of Telecommunication Technology and Signal Processing, Faculty of electrical engineering, mechanical engineering and naval architecture and Head of Centre for Science and Technology Development at the University of Split

Presentation of the project „Technology Transfer infrastructure in Croatian Adriatic region – TTAdria"
Petra Jelić, „ Project Assistant, University of Split

8:50-9:10
Horizon 2020 – Why and how to participate in it!
prof. Adrijan Barić, Ph.D. Department of electronics, microelectronics, computer and intelligent system, Faculty of electrical engineering and computing in Zagreb

Why it is important to participate in Horizon 2020 projects. How and who should apply. Some comments related to what will be included in Horizon 2020 and when it will be possible to apply. What are the chances to succeed in getting the project proposal funded. What are the expect results/benefits. How to improve our success rate in the future.
Adrijan Barić was born in Zagreb in 1958. He received the Dipl. Ing. and M.Sc. degrees in Electrical Engineering from the University of Zagreb and the Ph.D. degree in electronics from the Dublin City University, Ireland, in 1995. He is currently a Professor at the University of Zagreb. His research interests include semiconductor device modeling, integrated circuit design, interconnect modeling and electromagnetic compatibility. He has published over 50 papers in international journals and conferences.

9:10-9:30
Protection and management of intelectual property in innovation-based start-ups
Assistant Professor Dubravko Babić, Ph.D. Applied Optics Laboratory, Faculty of electrical engineering and computing in Zagreb

Protection of intectual property (IP) is one of essential elements of business success of companies based on innovation and high added-value products. A well-written patent that covers company's products can give the company critical advantage in negotiating an investment and in front of powerful competitors in the marketplace. This lecture will discuss different types of intelectual property, its use, purpose, and ways of monetizing it with focus on practices of United States companies. The recent changes in the Unites States patent law (Leahy-Smith Act) will be discussed along with practical advices to entrepreneurs who want commercialize products based on new ideas and creative work.
Dubravko Babić received his Dipl. Ing. Degree on Faculty of Electrical Engineering and Computing in Zagreb in 1982, and his M.S. and Ph.D. degrees from University of California, Santa Barbara in the field semiconductor electronics and optoelectronics. Since 1995 he has been working in Silicon Valley, California, for Hewlett Packard Laboratories. Since 1999, he had founded Alvésta Corporation, co-founded Group4 Labs, Inc., and led his own consuling company Etanvie Technologies. Between engineering and management functions for these companies he managed their intellectrual property portfolios, wrote and prosecuted patents using outside patent counsel, and served as an expert witness in numerous IP litigation cases in the field of optics, optoelectronics, semiconductor technology and manufacturing equipment. As a part of this legal work, he had analyzed patents, written reports, and testified in front of United States Court. Dr. Babić is an inventor on twenty-two US patents. Dr. Babić joined the faculty of University of Zagreb in 2012.

9:30-10:00
Nurturing an Innovative Profile
Marko Bervanakis, Innovation Coach and Facilitator, Ericsson Nikola Tesla

In this lecture we will reflect on an old Information System Management term: "Information thru Innovation" (i.e. a term from the early 90s) and show how this has come full-circle in today's innovative world! To help us, we will explore five (5) key information management aspects and skills a person needs to be aware of and must develop to form a strong innovative profile. To compliment this and to summarize, we reflect on these skills into the Innovative Nuevo "T-profile" concept for an innovative person (keep it real & honest). Then wrap-up with the "Innovation via Information" term and discuss its validity. The presentation will be peppered with real-life experiences from the lecturer and multimedia to reflect this paradigm.
Marko Bervanakis is currently working at ERICSSON Nikola Tesla as an Innovation Coach and Facilitator. In the past - he has also worked in other Global Telecoms companies (in Europe & Asia pacific) as a technical trainer-educator, consultant, manager and innovation facilitator. He also serves as a Global Services Ericsson innovation facilitator and helps shape the innovation program and community on company level. He has won several company Innovation awards and has submitted several internal company patent proposals. Additionally, he has also worked as a Science & mathematics pedagogue in both Primary & Secondary schools. Outside of work, he often coaches (motivation workshops) local sports teams and actively plays all kinds of sports.

10:00-10:30 Coffee break

10:30-10:50
Finding the next big thing: enabling internal and external innovations in Croatian Telecom
Goran Krajnović, Product Development Department, Croatian Telecom

Telecommunications industry is at a pivotal point of changing business models. Empowering innovation in the telecom world is critical for ensuring long term sustainability of the telecommunications industry, and enabling innovation brings its own set of challenges in large process-oriented organizations. Enabling innovation must focus both internally to foster growth and evolution of the company, and externally to support the independent entrepreneurs and innovators.
Goran Krajnović received his Dipl. Ing. Degree from Faculty of Electrical Engineering and Computing in Zagreb in 2000. Since then he has worked in Croatian Telecom inc. (part of Deutsche Telekom group), in various roles starting in Internet Service Platform technology development and IPTV platform technical development before shifting to marketing in Product Development. He participated or lead implementations of several innovative products, including TV, cloud services, 3 screen services, as well as driving innovative process improvements in product development. He has headed the Technical Product Strategy and Innovation team, and is currently in the role of Director of Residential Product Development department in HT.

10:50-11:10
Support Services for Internationalization of Business and Innovation – Enterprise Europe Network and EU IPR Helpdesk
Goran Zeković, Head of the Enterprise Europe Network Project, BICRO

Presentation focuses on valuable support services available free of charge to all entrepreneurs and researchers interested in internationalization of their businesses or innovative technologies. It explains the role of the Enterprise Europe Network (EEN) and services it offers, as well as the role and services offered by the EU IPR Helpdesk and its IPR Ambassadors scheme.
Goran Zeković holds law degree from the University of Zagreb, Master of Intellectual Property Law from the University of Turin and MBA from the IEDC-Bled School of Management. He currently works as a Head of the Enterprise Europe Network at the Business Innovation Agency of Croatia, Horizon 2020 Program Committee Member for SME's and Access to Finance, Horizon 2020 National Contact Point for Access to Finance and the EU IPR Helpdesk Ambassador. In period 2007-2013 he served the role of FP7 National Contact Point for Legal issues. He has worked as Assistant to General Manager of the Croatian Institute of Technology, Legal expert of the Ministry of Science, Education and Sports and Staff Attorney of the American Bar Association.

11:10-12:00
Panel discussion

SUMMER CAMP 2013

Friday, September 20, 10:30 – 12:00, (PENKALA I)
WESC: ERICSSON NIKOLA TESLA SUMMER CAMP 2013 WORKSHOP

Ericsson Nikola Tesla Summer Camp is a summer workshop for senior students from Croatian and universities from the region. The first Summer Camp was organized back in 2001 and since then more than 500 students participated. Students work five weeks on real problems in real industrial environment with mentors both from the company and universities. This year 68 students participates from Croatia (universities of Zagreb, Split, Osijek, Rijeka), Bosnia & Herzegovina (universities of Sarajevo and Tuzla) and Montenegro (university of Podgorica).

MODERATOR: SAŠA DEŠIĆ, PhD, Research and Innovation Manager,

ERICSSON NIKOLA TESLA, ZAGREB

Dr. Saša Dešić received his PhD degree from the University of Zagreb, Croatia in 2004. He has been working as a teaching assistant in the Faculty of electrical engineering and computing and as a research engineer in Ericsson Nikola Tesla. Currently he is the head of the Research and Innovation unit in Ericsson R&D Centre in Croatia. His primary fields of interest include e-Health applications and software engineering practices. He holds a position of assistant professor at the University of Zagreb, in the Faculty of Electrical Engineering and Computing, Telecommunications Department. Dr. Dešić is main coordinator of Summer Camp.

WEB control of subscriber's profile

Mentor(s): Marin Rudic

Team members: Blaž Marinović, Luka Ujević

Innovation KPI support tool

Mentor(s): Niksa Pivac, Ivan Graovac, Milan Ramljak

Team members: Nikola Božić, Tereza Vekić

Adaptation and expansion of OScope Summer Camp project from 2012 to TSS/Enabler

Mentor(s): Ivo Topic; Ante Zilic; Ivan Kalaica

Team members: Alen Čaljkušić

FIST cable connection test

Mentor(s): Tonci Dumanic

Team members: Ivana Lovrić, Ana Ljubičić

Android based test suite for mobile networks

Mentor(s): Ivan Stribic, Tomislav Jelic

Team members: Mario Čuljak, Roko Kraljević

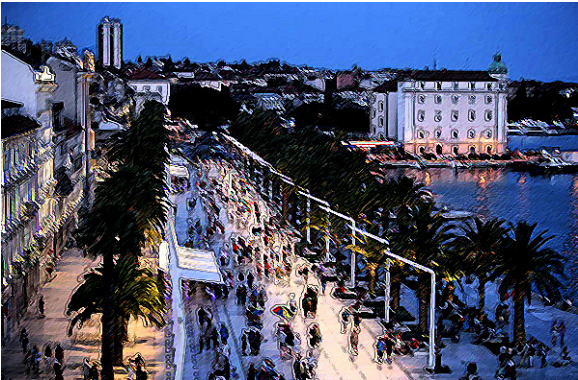**Corporate Search Engine based on open source software**

Mentor(s): Remi Tassing

Team members: Nataša Doko, Danijel Soldo

Real-time data model transformation for multiple application environments

Mentor(s): Tamás Varga; György Krajcsovits

Team members: Tino Brčić, Ivan Luetić

GENERAL INFORMATION

SPLIT – PRIMOŠTEN

VENUE

The 21st International Conference on Software, Telecommunications and Computer Networks (SoftCOM 2013 will be held in Primošten and Split.

Split is the largest city on the Croatian coast of the Adriatic Sea with a population of 180.000. The visit of Split can offer the travellers an extraordinary city tour without any need to take buses to reach the centre. Even today as you pass along the south promenade of the Palace, you can feel Diocle's spirit. You can also feel the light breeze blowing from the sea as it seems to be playing through the openings of the Cryptoporticus, welcoming to this town, travellers for whom as Diocles said, there will always be a bed, food, drink, music and the presence of God.

Primosten is considered one of the most beautiful destinations on the Croatian Adriatic coast. This small island community, connected to the mainland by bridge, offers the perfect blend of past and present. Narrow Mediterranean streets wrapped in ancient stone are home to little cafes, restaurants and artisan shops and a promenade that comes to life after dark. Its ancient buildings and structures function today as they have for centuries, providing the perfect environment for Primosten's many cultural events. Local lore and customs weave around fascinating stories of people and events, making this a place of daily enchantment. Visitors enjoy a warm Mediterranean climate with 315 sunny days per year and an environment that offers a stunning view from every vantage point. Rolling mountains meet with one of the world's healthiest coastal eco-systems to create an abundance and variety of flora and fauna, on land and in the sea. Visitors come from the world over to bask in Primosten's rich cultural heritage and the Dalmatian way of life.

TRAVELING TO SPLIT AND PRIMOŠTEN

Split can be reached

by air: directly from Amsterdam, Brussels, Franfurt, London, Lyon, Manchester, Munich, Paris, Vienna and via Zagreb from all world airports. For more information please visit Airport Split-Kastela.

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

Primosten is situated in the middle of the Adriatic coast, between the cities of Split and Zadar.

Primosten can be reached:

by bus from: Split Airport or Zadar Airport

by bus from: Split port or Zadar port

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 USB Proceedings when registering at the conference desk.

LANGUAGE

The Conference language is English.

REGISTRATION

Wedesday, September 18: 08:00-12:30, 14:30-18:30
Thursday, September 19: 08:00-11:00, 15:00-17:30
Friday, September 20, 08:00-11:30

SECRETARY

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