


SoftCOM 2000

8th INTERNATIONAL CONFERENCE ON SOFTWARE, TELECOMMUNICATIONS AND COMPUTER NETWORKS

October 10-14, 2000

Split (Croatia)
Rijeka (Croatia)
Trieste (Italy)
Venice (Italy)

FINAL PROGRAM

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N. Pavešić, University of Ljubljana, Slovenia

B. Souček, IRIS, Italy

Ž. Sutlar, Croatian Telecom, Croatia

R. Walters, Satin Information Services, UK

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TECHNOLOGY CENTER SPLIT

Sponsored by

IEEE COMMUNICATIONS SOCIETY (COMSOC)
Technical committee of communications software
Technical committee of communication switching and routing
(Technical Co-sponsorship)

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G.W.R. Luderer, Arizona State Univ., USA (Vice Chair)
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GREETINGS FROM THE GENERAL CHAIRMAN

It is my pleasure to invite you to the SoftCOM 2000 international conference in the pleasant ambiance aboard the luxury ship Marko Polo. This year's Conference successfully continues gathering people dealing with telecommunications technology from all around the world. We expect scientists and engineers from over 30 countries to participate in this event. We have made an effort to provide attendees with different aspects of contemporary communications. We have scheduled the conference program to include technical sessions, tutorials and workshops as well as a business forum in telecommunications. Mr. Åke Enell (President Ericsson Nikola Tesla), Davorin Belamarić (Head of the Department for Software Development for Mobile Networks Siemens, Zagreb) and Dr. Siegfried Bucholtz (Management Consultant, Vienna) will be our plenary speakers.

The SoftCOM 2000 executive committee is happy to host you aboard the ship Marko Polo cruising on the route Split-Rijeka on the Croatian coast and Trieste-Venice on the Italian coast of the Adriatic Sea. So the participants will have the opportunity to share the ideas in an uninterrupted, pleasant and inspiring ambience. Please join us and profit by communicating with experts from all around the world and win the enjoyable experience of the sailing conference.

Juraj Buzolić, General Chair

ERICSSON NIKOLA TESLA PRESIDENT TALK

"... Ericsson believes in an 'all communicating' world. Voice, data, images and video conveniently communicating anywhere, anytime in the world, increasing both quality of life, productivity and enabling more resource efficient world..."

Åke Enell, President of Ericsson Nikola Tesla

SoftCOM 2000 TECHNICAL PROGRAM CHAIR MESSAGE

The 8th International Conference on Software, Telecommunications and Computer Networks SoftCOM 2000 will be held from 10 to 14 October 2000 in the pleasant ambience of the luxury ship Marko Polo on the route Split-Rijeka-Trieste-Venice. It is organized by the University of Split (Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture), Technology center Split and HT-TKC (Croatian Telecom) Split. The Conference is sponsored by the Ministry of Science and Technology of the Republic of Croatia, the University of Split and by the IEEE Communications Society (COMSOC) Technical Committees of Communication Software and Communication Switching and Routing.

Over 120 papers submitted for presentation at SoftCOM 2000 have been reviewed by more than 70 recognized international scientists from universities, institutes and companies. Each paper has been reviewed by three reviewers and all submitted papers have been carefully selected based on their contribution, relevance, conceptual clearness and overall quality. Nearly 75% of submitted papers have been recommended for presentation within the technical program.

This year we have planned a special session dedicated to the development of the academic networking in Alps-Adria countries. The basic idea was to gather academic networking institutions, universities and others who participate in development of academic networking. Special session will include 13 presentations from 7 Alps-Adria countries. Papers presented at this session will be considered for possible publications in IEEE journals in 2001.

The Technical Committee has also invited several outstanding experts to present the state of the art in the most interesting topics in contemporary communication technologies. In addition, six tutorials will be held by well known experts will be well accepted from professionals engaged in development and design of advanced communication systems and services. In addition, we have organized two workshops: first dedicated to contemporary communication systems and second dedicated to intelligent transport systems.

This year we have continued with a practice of organizing some events related to SoftCOM Conference including telecom business forum and exhibition. In addition, a meeting of several universities from Croatia, Italy and Slovenia will be organized.

We believe that the Conference will help all of us to keep step with dynamic and complex development of contemporary communications and related technologies.

We would like to thank and credit the authors for their excellent contributions. Particular thanks to the reviewers for their great job.

We are looking forward to seeing you aboard the ship Marko Polo.

Program Committee Co-chairs

Nikola Rožić, Dinko Begušić

GENERAL INFORMATION

LOCATION

SoftCOM 2000 and all related events (Tutorials, Workshops, Business Forum, Exhibitions) will be held aboard the luxury ship "Marko Polo". The ship will stay for one day in Split (October 10), in Rijeka (October 11), in Trieste (October 12), and in Venice (October 13). The ship will sail between the above-mentioned cities overnight. Return to Split is scheduled for October 14 in the morning.
The ship "Marko Polo" will be available for accommodation in Split from October 9 in the morning.

HOW TO GET TO SPLIT

by air: Split can be reached directly or via Zagreb from all world airports. Split airport is only 20 minutes by bus.
by ship: Split harbor is daily connected with Rijeka (Croatia) and Ancona (Italy).

WEATHER

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

LANGUAGE

The Conference language is English.

PROCEEDINGS

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

REGISTRATION AND RECEPTION

Each day of the Conference from 08:00 till 16:00

SECRETARY

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OPENING CEREMONY

Tuesday, October 10, 2000, Split *(ADRIATIC)*

12.00 - 13.00 WELCOME ADDRESSES

PLENARY SESSION

Tuesday, October 10, 2000, Split *(BRAC)*

16.00 - 16.25 **Strategy of Introduction of New Telecommunication Services to Increase Exploitability of Network Resources**, *Juraj Buzolić, Croatian Telecom, Croatia*

16.25 - 16.50 **Croatian Contribution to the World Communications**, *Åke Enell, Ericsson Nikola Tesla, Croatia*

16.50 - 17.15 **Software design as a business line in Croatia**, *Davorin Belamarić, Siemens, Croatia*

17.15 - 17.40 **Fit for the Future – Only a Matter of Modern Technology?**, *Siegfried Buchholz, Austria*

Coffee break

17.55 - 18.15 **UMTS – Expectations and Challenges**, *Antun Carić, Ericsson Nikola Tesla, Croatia*

18.15 - 19.00 **A New Dimension in Multimedia Distribution over Satellite and Terrestrial Telecommunication Systems**, *Mario De Blasi, University of Lecce, Italy*

INVITED SPEAKERS

Wednesday, October 11, 2000, Rijeka *(BRAC)*

08.30-09.00 Iterative Soft-input Soft-output Decoding Algorithms: A Complexity Analysis
Sergio Benedetto, Polytechnic of Turin, Italy

09.00-09.30 Third Generation Network Strategies for the New Telecoms World
Rajko Pfaff, Ericsson Nikola Tesla, Croatia

14.30-15.00 The Significance of Standards for Croatian Informatics and How to Reach Them?
Zdravko Krakar, Croatian Information Technology Agency, Croatia

Thursday, October 12, 2000, Trieste *(BRAC)*

08.30-09.00 Online Banking in Croatia
Ivan Strugar, University of Zagreb, Croatia

14.30-15.00 Competence Shift Towards New Telecom World: Case Study
Dubravko Cej, Ericsson Nikola Tesla, Croatia

Friday, October 13, 2000, Venice *(BRAC)*

08.30-09.00 Terabit Routers and High Speed IP Networks
Horst Besier, Detsche Telekom, Germany

21.00-22.00 Quantum Mind Self-organized Networks, QMSON
Branko Souček, IRIS, Italy

SPECIAL SESSION

Friday, October 13, 2000, Venice *(BRAC)*

09.15-12.30 Feature Topic: Academic Networking in Alps-Adria Countries

TUTORIALS

Tuesday, October 10, 2000, Split *(HVAR)*

09.00-12.00 Software as Intellectual Property - a Technologist's View
Gottfried W.R. Luderer, Arizona State University, USA

Wednesday, October 11, 2000, Rijeka *(HVAR, KRK)*

09.15-12.30 Extranets: Concepts, Standards and Cost Issues
Algirdas Pakstas, University of Sunderland, UK

09.15-10.45 WTFC Applications in Integrated Networks
Julije Ožegović, University of Split, Croatia

Thursday, October 12, 2000, Trieste *(HVAR, BRAC)*

09.15-12.30 Turbo Codes: A Tutorial Survey from Theoretical Understanding to Applications
Sergio Benedetto, Polytechnic of Turin, Italy

15.15-18.30 New Generation Optical IP Networks
Andrzej Jajszczyk, University of Mining and Metallurgy, Poland

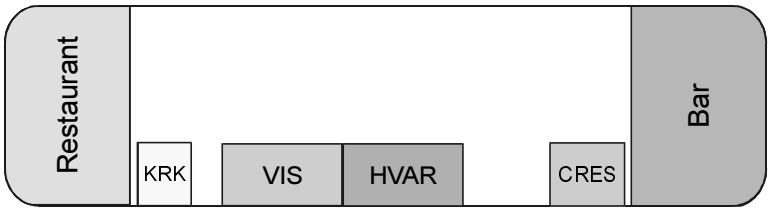
WORKSHOPS

Tuesday, October 10, 2000, Split *(VIS, KRK)*

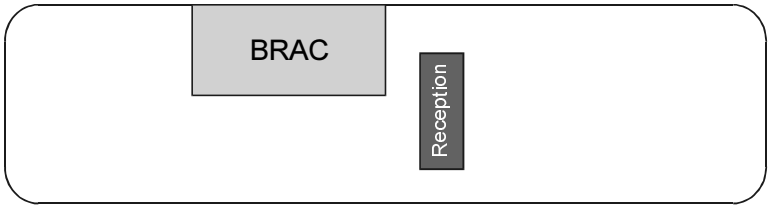
09.00-11.00 Workshop on Contemporary Communications I & II

TECHNICAL PROGRAM & TUTORIALS

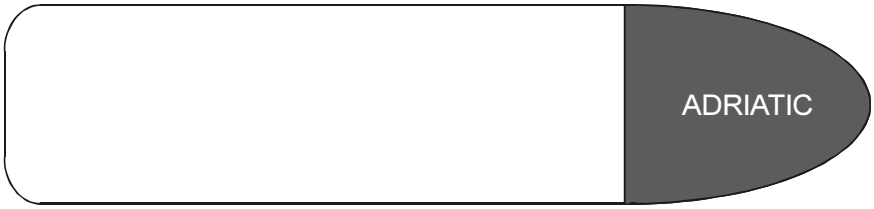
HALL		BRAC	HVAR	VIS	KRK
Tuesday	09.00-11.00		Tutorial Gottfried W.R. Luderer	Workshop on Contemp. Communications I	Workshop on Contemp. Communications II
	11.00-12.00				
Wednesday	09.15-10.45		Tutorial Algirdas Pakstas		Tutorial Julije Ožegović
	11.00-12.30		Tutorial Algirdas Pakstas	Software in Communication Systems	Traffic Modeling
	15.15-16.45		Network Architectures	Coding and Signal Processing	Electromagnetic Compatibility
	17.00-18.30		Switching and Routing	Traffic Control	
Thursday	09.15-10.45		Tutorial Sergio Benedetto	Mobile Networks	Advanced Services
	11.00-12.30		Tutorial Sergio Benedetto	Mobility in Wireless Networks	Quality of Service
	15.15-16.45	Tutorial Andrzej Jajszczyk	Communication Networks and Protocols	Distributed Systems and Security	
	17.00-18.30	Tutorial Andrzej Jajszczyk			
Friday	09.15-10.45	Special Session	Multimedia Systems and Services I		
	11.00-12.30		Multimedia Systems and Services II		



Salon Deck



Cabin Deck



Car Deck

TIMETABLE

Tuesday, October 10, 2000
Split

09.00-11.00	*Tutorial* *Gottfried W.R. Luderer (HVAR)*	*Workshop on Contemporary Communications I (VIS)*	*Workshop on Contemporary Communications II (KRK)*
11.00-12.00			
12.00-13.00	**O P E N I N G C E R E M O N Y (A D R I A T I C)**		
13.00-14.30	**L U N C H E O N**		
14.30-15.45	**S O C I A L P R O G R A M** Guided Tour through Diocletian Palace		
16.00-19.00	**P L E N A R Y S E S S I O N (B R A C)**		
20.00-21.00	**D I N N E R**		

Wednesday, October 11, 2000
Rijeka

08.30-09.00	**I N V I T E D T A L K (B R A C)**		
09.15-10.45	*Tutorial* *Algirdas Pakstas (HVAR)*		*Tutorial* *Julije Ožegović (KRK)*
11.00-12.30		*Software in Comm. Systems (VIS)*	*Traffic Modeling (KRK)*
12.30-14.30	**L U N C H E O N**		
14.30-15.00	**I N V I T E D T A L K (B R A C)**		
15.15-16.45	*Network Architectures (HVAR)*	*Coding and Signal Processing (VIS)*	*Electromagnetic Compatibility (KRK)*
17.00-18.30	*Switching and Routing (HVAR)*	*Traffic Control (VIS)*	
20.00-21.00	**D I N N E R**		

Thursday, October 12, 2000
Trieste

08.30-09.00	**I N V I T E D T A L K (B R A C)**		
09.15-10.45	*Tutorial* *Sergio Benedetto (HVAR)*	*Mobile Networks (VIS)*	*Advanced Services (KRK)*
11.00-12.30		*Mobility in Wireless Networks (VIS)*	*Quality of Service (KRK)*
12.30-14.30	**L U N C H E O N**		
14.30-15.00	**I N V I T E D T A L K (B R A C)**		
15.15-16.45	*Tutorial* *Andrzej Jajszczyk (BRAC)*	*Comm. Networks and Protocols (HVAR)*	*Distributed Systems and Security (VIS)*
17.00-18.30			
20.00-21.00	**D I N N E R**		

Friday, October 13, 2000
Venice

08.30-09.00	**I N V I T E D T A L K (B R A C)**		
09.15-10.45	**S P E C I A L S E S S I O N** **(BRAC)**	*Multimedia Systems and Services I (HVAR)*	
11.00-12.30		*Multimedia Systems and Services II (HVAR)*	
12.30-14.30	**L U N C H E O N**		
14.30-19.00	**S O C I A L P R O G R A M** Visit to Venice		
20.00-21.00	**D I N N E R**		
21.00-22.00	**I N V I T E D T A L K (B R A C)**		

TUTORIALS

SoftCOM 2000, October 10-14, 2000
Split, Rijeka (Croatia)
Trieste, Venice (Italy)

Tuesday, October 10, 2000, Split *(HVAR)*

09.00-12.00 Software as Intellectual Property - a Technologist's View

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

Abstract

In this half-day seminar, we will look at the history of software evolution from an intellectual property perspective. How are people who generate software being rewarded? We are not taking a legalistic viewpoint but are rather more interested in the economic aspects, as seen from the point of view of a technologist with interest in marketing. This will eventually lead us from history to some speculations about the future. Milestones to be discussed are the initial bundling of software with hardware, the struggle for the viability of software patents, the role of the Unix T operating system, initial free software like Gnu, leading to Linux as the currently most prominent exponent. Other aspects are the open source movement, the role of standards and the struggle to control them, and the recent illicit music copying using the Napster program. How could the network evolve to help or hinder some of the recent occurrences, and what are the likely and desirable characteristics of network features to foster a healthy evolution of the software field?

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. Besides the academic involvement at the university, Dr. Luderer has been teaching short courses since 1992 on high-speed networks and telecommunication software architecture in various countries. 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.

Wednesday, October 11, 2000, Rijeka *(HVAR)*

09.15-12.30 Extranets: Concepts, Standards and Cost Issues

Algirdas Pakstas, University of Sunderland, UK

Abstract

This tutorial is devoted to the new emerging area of the Internet use, namely, "extranets". This is often referred as a "third wave" of the universal Internet. Definitions and examples of extranet are given. Extranets are compared with better-known intergroupware and the concepts of Communications, Collaboration, and Coordination are illustrated. Notion of multi-extranet is introduced as a special case typically found in the Science Park (SP) environments.
Three types of the organizations using facilities of the SP and having different relationships with its multi-extranet are distinguished: (a) "normal" firms which will have their own Intranets and access to the Internet either on their own or via SP facilities; (b) "small" firms, which will obtain access to the Internet via SP facilities and with the only Intranet, which will be actually extranet; (c) "large" firms which, perhaps, will not bother to connect to the SP facilities at all.
Open application standards are discussed and example of suite of standards supported by consortium established by the Netscape Communications is briefly presented. Roles of network management and security issues are outlined as crucial for the success of the electronic commerce. Existing experience of running Intranets is discussed and accepted as applicable for extranets and criteria for choosing planning strategy for building of extranets are suggested.

Biography

Dr..Algirdas Pakstas received his M.Sc. in radiophysics and electronics in 1980 from the Irkutsk State University, Ph.D. in systems programming in 1987 from the Institute of Control Sciences and Professor title from the Agder College in 1998. Currently he is with the University of Sunderland where he is doing research in software engineering for distributed computer systems, communications engineering and real-time systems.
He is active in the IEEE Communications Society Technical Committees on Enterprise Networking, Communications Software and Multimedia. He has authored 2 research monographs and more than 140 other publications. He is a senior member of IEEE and member of ACM and the New York Academy of Sciences. His recent and future involvement into IEEE and related conferences in various capacities includes: ENM'97 (TPC), Globecom'97 (TPC), DB&IS'98 (TPC), ICC'98 (SAS Session organizer), ENCOM'98 (TPC), 1999 World Manufacturing Congress (International Steering Committee and Programme Committee), SoftComm'99 (TPC), Globecom'99 (TPC), DB&IS'00 (TPC), ICC'00 (TPC and Vice Chair for Workshops), IN'00 (TPC), Globecom'00 (TPC), ICC'01 (TPC), WMC'01 (International Steering Committee and Programme Committee). He is currently a member of the Editorial Board of the IEEE Communications Magazine, Communications Interactive and Associate Editor for the Global Communications Newsletter.

Wednesday, October 11, 2000, Rijeka *(KRK)*

09.15 - 10.45 WTFC Applications in Integrated Networks

Julije Ožegović, University of Split, Croatia

Abstract

To integrate voice and data traffic in packet switching networks, the problems of admission control, resource reservation, scheduling, flow control and flow conformance control are to be solved. WTFC (Window-Time space Flow Control) is recently proposed technology for efficient end-to-end packet rate and window regulation. WTFC uses deterministic model of network response with finite number of packets, which defines the Window-Time plane. Current window and round trip time measurements are used to calculate optimal packet rate and window. WTFC keeps the network at the working point of on average empty packet queues, thus being prospective in the area of voice and data integration. WTFC can be used to solve several common problems: data flow regulation in presence of data and persistent (voice) traffic, flow conformance control, voice coding mode and rate selection, and customer admission control. In this tutorial, the overview of the WTFC theory is continued with WTFC applications in voice-data integration field. Simulation experiment traces are shown and analyzed.

Biography

Dr. Julije Ožegović graduated electrical engineering at FESB Split, University of Split in 1977. He spent two years in the industry working as a research and development engineer for ETAS Split. From 1979 Julije Ožegović is working with FESB Split. He received his Mr.sc. degree in 1981 from FER Zagreb, University of Zagreb, in the field of data communications. He received Ph.D. from FESB Split, University of Split, in 1998. with thesis "Optimal Flow Control Algorithms in Heterogeneous Packet Networks". Currently at the position of docent with Electronics department of FESB Split, he is teaching Digital electronics, Computer networking, and Digital signal processing classes. He is also leading Computer engineering department at High School of Practical Sciences in Split. In his scientific activities, Julije Ožegović is doing research in the field of traffic management in integrated packet switching networks. His work is conducted under several past and present projects with Croatian ministry of science and technology, as well as numerous projects for industry. He is the author of numerous scientific and engineering papers.

Thursday, October 12, 2000, Trieste *(HVAR)*

09.15 - 12.30 Turbo Codes: A Tutorial Survey from Theoretical Understanding to Applications

Sergio Benedetto, Polytechnic of Turin, Italy

Abstract

The tutorial will present turbo codes and other form of concatenated codes with interleavers starting from their first presentation (ICC '93), passing through the first successful attempts to explain their exceptionally good performance, and arriving to a few guidelines for the code design. The last part of the talk will deal with applications, and, in particular, the new CCSDS telemetry channel coding standard, and the UMTS standard.

Biography

Dr. Sergio Benedetto, Professor of Data Transmission Theory in the Department of Electronics, Polytechnic of Turin, Italy. Professor Benedetto received the "Laurea in Ingegneria Elettronica" (summa cum laude) from Polytechnic of Turin in 1969. From 1970 to 1979 he was with the Institute of Electronics and Telecommunications, first as a Research Engineer, than as an Associate Professor. In 1980, he was made a Professor in Radio Communications at the University of Bari. In 1981 he rejoined to Polytechnic of Turin as a Professor of Data Transmission Theory in the Department of Electronics. He spent nine months in years 1980-1981 at the Systems Science Department of University of California, Los Angeles as a Visiting Professor and three months at the University of Canterbury, New Zealand, as an Erskine Fellow. He has co-authored two books in signal theory and probability and random variables (in Italian), and the books "Digital Transmission Theory" (Prentice-Hall, 1987), "Optical Fiber Communications Systems" (Artech House, 1996), and "Principles of Digital Communications with Wireless Applications" (Plenum 1999, to appear), as well as over 200 papers for leading engineering journals and conferences. He is Area Editor for Signal Design, Modulation and Detection for the IEEE Transactions on Communications. Active in the field of digital transmission systems since 1970, his current interests are in the field of optical fiber communications systems, performance evaluation and simulation of digital communication systems, trellis coded modulation and concatenated coding schemes. Dr. Sergio Benedetto is a Fellow of the IEEE.

Thursday, October 12, 2000, Trieste *(BRAC)*

15.15 - 18.30 New Generation Optical IP Networks

Andrzej Jajszczyk, University of Mining and Metallurgy, Poland

Abstract

The tutorial addresses the IP over WDM networking technology supporting multiple services. The tutorial will provide a comprehensive overview of various alternatives for carrying IP traffic over WDM or DWDM networks, including IP over SONET/SDH over WDM and IP over WDM. Several encapsulation and framing approaches using PPP, HDLC, SDL, and Gigabit Ethernet will be discussed. Methods enabling IP to serve as a multiprotocol platform will be presented including such protocols as IntServ, DiffServ, and MPLS. Role of the ATM layer will be discussed, evaluated and compared with that of multiprotocol IP. Selected practical experiences with optical IP networks will be presented.

Biography

Dr. Andrzej Jajszczyk is a Professor at the Department of Telecommunications, AGH University in Krakow, Poland. He received M.S., Ph.D., and Dr Hab. degrees from Poznan University of Technology in 1974, 1979 and 1986, respectively. He spent a year at the University of Adelaide in Australia and two years at Queen's University in Kingston, Ontario, Canada as a visiting scientist. He is the author or co-author of six books and over 150 scientific papers, as well as 19 patents in the areas of telecommunications switching, high-speed networking, and network management. He has served as a Consultant to telecommunications industry, operators, and government agencies in Australia, Canada, France, Germany, USA, and Poland. He was the founding editor of the IEEE Global Communications Newsletter and editor for IEEE Transactions on Communications. Since 1998 he has been the Editor-in-Chief of IEEE Communications Magazine. He is a Fellow member of IEEE.

SPECIAL SESSION

Friday, October 13, 2000, Venice *(BRAC)*

09.15-12.30 Feature Topic: Academic Networking in Alps-Adria Countries

Chair: Algirdas Pakstas, University of Sunderland, UK

Advanced Solutions for Distance Learning via Satellite
M. De Blasi, University of Lecce, Italy*; C. des Dorides*, Alenia Spazio, Italy

Trends in Networked Collaborative Virtual Environments
S. Pandžić, C. Joslin, N. Magnenat Thalmann, University of Geneva, Switzerland

Homer II - Man-machine Interface to Internet for Blind and Visually Impaired People
N. Pavešić, J. Gros, S. Dobrišek, F. Mihelič, University of Ljubljana, Slovenia

Academic and Research Network of Slovenia
A. Jauk, M. Bonač, ARNES, Slovenia; *I. Ozimek, G. Kandus*, Jozef Stefan Institute, Slovenia

The LAN of TUB and its Links with other Universities in Budapest
G. Németh, G. Remzs, I. Tétényi, L. Szandi, University of Budapest, Hungary

Collaboration between Academia and Industry: Telecommunications and Informatics at the University of Zagreb
I. Lovrek, M. Kos, B. Mikac, University of Zagreb, Croatia

C O F F I E B R E A K
(10.45-11.00)

Chair: Ignac Lovrek, University of Zagreb, Croatia

The Role and Strategy of an ARNet in a Developing Country
Z. Bekić, J. Gojšić, P. Pale, CARNet, Croatia

The Implementation of Broadband Network Technologies in CARNet
N. Bartolinčić, I. Pezelj, I .Velimirović, A. Žigman, CARNet, Croatia

CARNet: Educated Users for Effective Utilization of Information Technology
M. Milinović, J. Tingle, V. Vrga, CARNet, Croatia

The Italian Academic Network GARR: Evolution in the Gigabit Era
C. Allocchio, C. Battista, M. Carboni, L. dell'Agnello, GARR - Italian Academic and Research Network, Italy

DFN Gigabit Network - The Backbone for Teleteaching/Telelearning in Higher Education - Status Report
R. Paffrath, DFN, Germany

IP-multicasting to Support Distance Learning over Satellite Networks
Horst D. Clausen, Bernhard Colini-Nocker, University of Salzburg, Austria; *Giuseppe Tomasicchio*, EuroSkyWay, Italy

TECHNICAL PROGRAM

SoftCOM 2000, October 10-14, 2000
Split, Rijeka (Croatia)
Trieste, Venice (Italy)

Wednesday, October 11, 2000, Rijeka *(HVAR)*

15.15-16.45 Network Architectures

Chair: Zoran Skočir, University of Zagreb, Croatia

Unifying Telecommunication Architectures for Next Generation Networks
N. Lagha, L. Maknavicius, S. Znaty, ENST bretagne, France

Supporting Multicast with Multicast ATM Switches in ATM UNI 3.0/ 3.1
Ruay-Shiung Chang, Ming-Huang Guo, National Dong Hwa University, Taiwan

The Network Aspects of Global Information Infrastructure Implementation in Croatia
Miroslav Bijele, Croatian Telecom, Croatia

Shared Access Point System for GMN-CL
Kazuyoshi Hayase, Takaaki Murai, Junichi Murayama, Kouichi Suto, NTT Information Sharing Platform Laboratories, Japan

Verification of a Transport Network Database Model
Ivan Matasić, Zoran Skočir, University of Zagreb, Croatia

At the Front End in Migrating to Gigabit Ethernet
Stanislav Milanovic, Serco Group, Italy

17.00-18.30 Switching and Routing

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

A Novel Architecture for Dynamic Least Cost Routing
Peer Hasselmeyer, Darmstadt University of Technology, Germany

An Implementation of a Reliable Delivery of Files over Heterogeneous Network (MBONE)
Irdawati Ab Rahman, Mimos Berhad, Malaysia; *Kang Chee Chiang*, University Science of Malaysia, Malaysia;

LMS-SA: A New Model of Lightweight Reliable Multicast Services
Xu Wang, Shujing Zhang, Qigang Zhou, Hu Liu, Tongji University, China

Availability Evaluation for Redundant Load-sharing Communication Systems with Planned Outage under Different Upgrade Schemes
Yonghuan Cao, Hairong Sun, Kishor S. Trivedi, Duke University, USA; *James J. Han*, Motorola, USA

Availability Analysis of Bi-directional Self healing Ring
Ivan Radoš, HPT Mostar, Bosnia and Herzegovina

Wednesday, October 11, 2000, Rijeka *(VIS)*

11.00-12.30 Software in Communication Systems

Chair: Tatjana Kapus, University of Maribor, Slovenia

Specification of Mobile System Ambients Using the Temporal Logic of Actions
Tatjana Kapus, University of Maribor, Slovenia

Building Domain-specific Mobile-Agent Platforms from Reusable Software Components
Pablo Jorge Marques, Luis Moura Silva, João Gabriel Silva, University of Coimbra, Portugal

Component Framework Support for Developing Device Drivers
Sam Michiels, Peter Kenens, Frank Matthijs, Dirk Walravens, Yolande Berbers, Pierre Verbaeten, University of Leuven, Belgium

Code Generation for Component based Telecommunication Service Development
Marc Born, GMD Fokus, Germany; *Olaf Kath*, Humboldt University in Berlin, Germany

Design, Implementation and Performance Evaluation of a QoS-Aware Middleware for MPEG-4 Applications
Rajiv Chakravorty, Deepak Jaiswal, Rajesh Babu, Silicon Automation Systems, India

The Efficient Symbolic Tools Package
Robert Meolić, Tatjana Kapus, Zmago Brezočnik, University of Maribor, Slovenia

Distributed Code Assignment in Multihop Radio Networks: Object-Oriented Software Simulations
Roberto Battiti, Alan A. Bertossi, Mauro Brunato, University of Trento, Italy

15.15-16.45 Coding and Signal Processing

Chair: Sergio Benedetto, Polytechnic of Turin, Italy

On the Removal of Error Floor Phenomenon in Turbo Codes
Krishna Kumar G. K., K. R. Ramakrishnan, Indian Institute of Science, India; *Adiga B. S.*, Motorola, India

Capacity Improvement of Standard CD System using Merging Bits
Olivia Nemethova, Siemens, Slovakia; *Peter Farkas*, Slovak University of Technology, Slovakia

A Robust, General Scope, Image Watermarking Algorithm
Bruno Carpentieri, University of Salerno, Italy

Polynomial Modeling in Diagnostic and Perceptual Adjustment System Design
Zdenka Babić, Svjetlana Kalaba, University of Banja Luka, Bosnia and Herzegovina; *Danilo P. Mandic*, University of East Anglia, UK; *Ferid Softić*, University of Banja Luka, Bosnia and Herzegovina

Slovenian Weather Forecast Speech Database
Janez Žibert, France Mihelič, University of Ljubljana, Slovenia

17.00-18.30 Traffic Control

Chair: Julije Ožegović, University of Split, Croatia

IP-Address Lookup Using Hardware Pipelining
Pi-Chung Wang, National Chiao Tung University, Taiwan; *Chia-Tai Chan*, Chunghwa Telecom, Taiwan; *Yaw-Chung Chen*, National Chiao Tung University, Taiwan

A Generic Congestion Control Architecture for Future Internet
Xicheng Liu, University of Cambridge, UK

Different Solutions to the RSVP Protocol Scalability Problem
Franco Tommasi, Simone Molendini, University of Lecce, Italy

Analysis of TCP/LLC Protocols Based on GPRS System
Luying Zhou, Pat S. Y. Chan, R. Radhakrishna Pillai, Kent Ridge Digital Labs, Singapore

WTFC based Integration of Voice and Data Traffic
Julije Ožegović, University of Split; Croatia, *Ivana Pezelj*, CARNet, Croatia; *Lada Sartori*, University of Split, Croatia

Wednesday, October 11, 2000, Rijeka *(KRK)*

11.00-12.30 Traffic Modeling

Chair: Marija Vrdoljak, University of Split, Croatia

An Efficient Rate Control for Point-to-Multipoint ABR Service in ATM Networks
Chia-Tai Chan, Chunghwa Telecom, Taiwan; *Chun-Liang Lee,* National Chiao Tung University, Taiwan; *Shuo-Cheng Hu,* Ming Shin Institute of Technology, Taiwan; *Yaw-Chung Chen*, National Chiao Tung University, Taiwan

An Example of Traffic-Accommodating Application
M. Podestà, Finsiel, Italy; *Silvia Giordano,* EPFL Switzerland; *P. Cremonese*, Finsiel, Italy

Design and Implementation of a Web-Based Surveillance System using Internet Multicast Communications
Jan-Ming Ho, Ray-I Chang, Institute of Information Science, Taiwan; *Jie-Yong Juang, Chia-Hui Wang,* National Taiwan University, Taiwan

Partial Buffer Sharing Scheme: Allowable Maximum Load Calculation
Milutin Kapov, Marija Vrdoljak, University of Split, Croatia

15.15-16.45 Electromagnetic Compatibility

Chair: Vesna Roje, University of Split, Croatia

Enhanced Procedure for Double Diffraction Losses Assessment
Ivan Marinović, Igor Zanchi, Zoran Blažević, University of Split, Croatia

Time Domain Modeling of Coupled Wires by the Finite Element Integral Equation Method
Dragan Poljak, Vesna Roje, Nikša Kovač, University of Split, Croatia

Control of Human Exposure to Electromagnetic Fields of Terminal Communication Equipment
Dina Šimunić, Armin Pavić, University of Zagreb, Croatia

Thursday, October 12, 2000, Trieste *(HVAR)*

15.15-16.45 Communication Networks and Protocols

Chair: Andrzej Jajszczyk, Univ. of Mining and Metallurgy, Poland

Data Link Control Scheme based on ARQ Retransmission Scheme for Wireless ATM Transmission
Željko Ilić, Alen Bažant, Viktor Matić, University of Zagreb, Croatia

A Toolkit for Managing Multi-protocol Interconnections
R. State, E. Nataf, O. Festor, INRIA, France

The Route Address Control for the B-ISDN and PSTN Interworking in ATM Switching System
HyunSoon Shin, Electronics and Telecommunications Research Institute, Korea

The Design of Interworking Functional Block at the Frame Relay Access Unit of MPOA Router
Mi-Ryong Park, Chang Min Park, Jong Hyup Lee, Electronics and Telecommunications Research Institute, Korea

A Multicast Protocol in Mobile Network with Advance Resource Reservation
Abderrahim Benslimane, Belfort-Montbeliard University of Technology, France

IDNS: A Simple Approach to Internet Host Portability
Yu Chen, Terrance Boult, Lehigh University, USA

Thursday, October 12, 2000, Trieste *(VIS)*

09.15-10.45 Mobile Networks

Chair: Gorazd Kandus, Jozef Stefan Institute, Slovenia

Dynamic Channel Allocation Algorithm for Next Generation Wireless Networks
A. M. Lele, S. K. Nandy, Indian Institute of Science, India; *D. H. J. Epema*, Delft Technical University, The Netherlands

A Planning Software for Determining Optimal Base Station Locations
Ranjan Bose, IIT Delhi, India

Principle and Prototype of an Original Location System of Mobile Stations in a Wireless LAN
E.Llusca, T.Val, C.Normand, J.J. Mercier, ICARE, France

Low-power Design of Digital Matched Filters in CMOS for DSSS CDMA Code Acquisition in 3G
A. Neslin İsmailoğlu, Tübitak Bilten, Turkey; *Tolga Yalçin,* Philips Semiconductors, Switzerland

New Frequency Assignment Techniques
R. K. Taplin, G. Wyman, BAE Systems, UK; *G. R. Bradbeer,* DERA Malvern, UK; *S. Hurley,* University of Wales, UK; *D. H. Smith*, University of Glamorgan, UK

Optimal Location Problems solved with Graph Theory
Jadranka Marasović, Maja Božanić, Jozo Jurić, University of Split, Croatia

11.00-12.30 Mobility in Wireless Networks

Chair: Nikola Pavešić, University of Ljubljana, Slovenia

Handover Management in Third Generation Mobile Communication Systems
Aruna Jayasuriya, John Asenstorfer, University of South Australia, Australia

An Optimization Method of Path Extension Handover Scheme in Mobile Communications
Woo-Jin Choi, Jeong-Jun Suh, Young-Keun Park, Yonsei University, Korea

An Efficient Algorithm to Improve Handoff in Mobility Support for IPv6 Protocol
Christos Bouras, Yannis Siahos, Paul Spirakis, University of Patras, Greece

A Directed Handoff in Wireless ATM Networks
WonKeun Choi, Inha Technical College, Korea; *DongHo Kim*, Korea University, Korea

15.15-16.45 Distributed Systems and Security

Chair: Odysseas I. Pyrovolakis, NTUA, Greece

Building Distributed Intelligent Networks and Services based on Distributed Object and Mobile Agent Technologies
Odysseas I. Pyrovolakis, Menelaos K. Perdikeas, Iakovos S. Venieris, National Technical University of Athens, Greece

ASMDS: An Architecture of Self-Management Distributed System
Ming Chen, Institute of Communications Engineering, China

Database Performance in Distributed Telecommunication Applications
Mihaela Žic, Darko Huljenić, Ericsson Nikola Tesla, Croatia

Estimation of Token Bucket Parameters for Videoconferencing Systems in Corporate Networks
J. Glasmann, M. Czermin, A. Riedl, Technical University of Munchen, Germany

A Security Infrastructure for the Virtual Project Office
Marie-Luise Moschgath, Institute for Information Systems, Switzerland; *Rolf Reinema, Mario Hoffmann*, Darmstadt University of Technology, Germany

Fail-Secure Computer Systems
H. Al-Sharjabi, L. MacKenzie, University of Glasgow, UK

Extensions to an ATM Security Method
Attila Török, Csaba Simon, Budapest University of Technology and Economics, Hungary; *Marius Oteşteanu*, Technical University of Timişoara, Romania

Interactivity and Real-time Consistency of Distributed Virtual Environments
Drissa Houatra, Luis Parmentier, France Telecom, France

Thursday, October 12, 2000, Trieste *(KRK)*

09.15-10.45 Advanced Services

Chair: Vjekoslav Sinković, University of Zagreb, Croatia

Integrated Services and Differentiated Services: A Functional Comparison
Franco Tommasi, Simone Molendini, University of Lecce, Italy

Increasing Interoperability by Converging Services in Constraint-Based-Routing Networks
Dag-Anders Brunstad, James B. Michael, Naval Postgraduate School, USA

An Programmable Approach to Resource Charging in Multi-Service Networks
Brian Lee, Ericsson, Ireland; *Donal O'Mahony*, Trinity College, Ireland

J.AgentX: A Tool for Dynamic Deployment of Open Management Services
Paulo Simões, Eduardo Lourenco, Pedro Pereira, Luís Silva, Fernando Boavida, University of Coimbra, Portugal

Investigation of Tele-Voting over the Wireless Application Protocol (WAP)
Efthimios Tambouris, Stelios Gorilas, Archetypon S.A., Greece

Antique Books Revived as Hypertexts
Anna Gentile, Ilenia Paladini, University of Lecce, Italy

11.00-12.30 Quality of Service

Chair: Keita Kawano, Osaka University, Japan

An Efficient Method to Search for the Location of Network Services with Multiple QoSs Guarantee
Keita Kawano, Kazuhiko Kinoshita, Tomokazu Masuda, Koso Murakami, Osaka University, Japan

Performance Evaluation of Call-Event based Network Service Regarding Guaranteed Quality of Service
Neven Bandalović, Darko Huljenić, Ericsson Nikola Tesla, Croatia

An End-to-End Middleware Solution for the Support of QoS in the Internet
C. A. Tsetsekas, S. I. Maniatis, I. S. Venieris, National Technical University of Athens, Greece

High Quality Multimedia Services on Demand
Andreas Schrader, Oliver Haase, NEC Europe, Germany

Implementing GIS Technology for QoS Improvement in Telecommunication Network (High Accuracy Fault Locating)
Damir Medved, Koraljka Brlas, Davor Šarić, Croatian Telecom, Croatia

Friday, October 13, 2000, Venice (HVAR)

09.15-10.45 Multimedia Systems and Services I

Chair: Boris Rogge, Ghent University, Belgium

A Framework for Advanced Content Description and Meta-data Handling
Boris Rogge, Rik Van de Walle, Steven Van Assche, Wilfried Philips, Ignace Lemahieu, Ghent University, Belgium

"Multimedia Contents Mill" - A Platform of Authoring and Delivery of Interactive Multimedia Contents
Yoshitsugu Tsuchiya, Wataru Takita, NTT Information Sharing Platform Laboratories, Japan; *Olaf Kath, Frank Stoinski*, Humboldt University Berlin, Germany

Visualization of Software by Means of the Example World Wide Web (WWW)
Gerrit Kalkbrenner, Berkeley University, USA; *Klaus Rebensburg*, Technical University Berlin, Germany

Improving UVOD System Efficiency with Batching
Vincent C. H. Lee, Jack Y. B. Lee, The Chinese University of Hong Kong, China

11.00-12.30 Multimedia Systems and Services II

Chair: Maja Matijašević, University of Zagreb, Croatia

Flexible Virtual Worlds Authoring using Media Library and Database Extensions to VRML
Maja Matijašević, Dario Mikić, University of Zagreb, Croatia

A Scalable VoD Server
Laurent George, University of Paris, France; *Dana Marinca,* Paris Engineering Academy of Computer Science, France; *Pascale Minet*, INRIA, France

A Framework to Overcome Physical Constraints of Small Screen Appliances in Ubiquitous Computing
Georg J. Schneider, Thai-Lai Pham, Safia Djennane, Siemens, USA

Synchronization Mechanism using Multiple-lock Checking Algorithm in Shared Virtual Environment with Haptic Force Feedback Control
O. Wongwirat, I. Burintramart, King Mongkut's Institute of Technology, Thailand; *A. Walairacht*, Tokai University, Japan; *N. Chotikakamthorn*, King Mongkut's Institute of Technology, Thailand; *S. Ohara*, Tokai University, Japan

SoftCOM 2000 events

SoftCOM 2000, October 10-14, 2000
Split, Rijeka (Croatia)
Trieste, Venice (Italy)

WORKSHOP ON CONTEMPORARY COMMUNICATIONS

Tuesday, October 10, 2000, Split *(VIS, KRK)*

09.00-11.00 Session I *(VIS)*

Chair: Marija Vrdoljak, University of Split, Croatia

Performance Evaluation of HMI System within ATM Integrated Service Switching System with MVA (Mean Value Analysis) Algorithm
Lee Jae-Heum, Electronics and Telecommunications Research Institute, Korea; *Jang Seung-Ju*, Dongeui University, Korea

Towards Security at all Stages of a System's Life Cycle
Markus Schumacher, *Ralf Ackermann*, *Ralf Steinmetz*, Darmstadt University of Technology, Germany

A Framework for Multiprotocol Communication
Danijel Jozić, Tihomir Osmanlić, Darko Huljenić, Ericsson Nikola Tesla, Croatia

Embedded Web Servers
Maja Božanić, Zvonko Čić, Darko Stipaničev, University of Split, Croatia

Railway Radio Coverage Calculation based on Terrain Map Digitizing
Zoran Blažević, Igor Zanchi, Ivan Marinović, University of Split, Croatia

From Voice to Wireless Banking From Telephone to Internet Delivery
Miho Pitarević, Zagrebačka Banka, Croatia

Multimedia Service – Video on Demand
Aljoša Pavelin, Croatian Telecom, Croatia; *Marija Vrdoljak*, University of Split, Croatia

Broadband Technologies – ATM and Frame Relay
Aljoša Pavelin, Croatian Telecom, Croatia; *Marija Vrdoljak*, University of Split, Croatia

09.00-11.00 Session II *(KRK)*

Chair: Zoran Skočir, University of Zagreb, Croatia

Customer Services-based Principles of Design
Tanja Sunarić, Marijo Krešić, Josip Ivić, HPT Mostar, Bosnia and Herzegovina

Customer Care on the Competitive Market
Anto Ivić, Toni Marić, Vanja Lučić, HPT Mostar, Bosnia and Herzegovina

Feasibility Study of Introduction of Broadband Services
Krešimir Krajinović, Croatian Telecom, Croatia; *Nikola Rožić*, University of Split, Croatia

Development of Digital Television and Interactive Services
Damir Kovačić, Croatian Telecom, Croatia; *Marija Vrdoljak, Nikola Rožić*, University of Split, Croatia

Implementation of IP Multimedia Services based on ATM and ADSL Technologies
Damir Dlaka, *Winton Afrić,* Croatian Telecom, Croatia; *Nikola Rožić*, University of Split, Croatia

CDMA Technology and 3G Mobile Systems
Damir Vakante, Croatian Telecom, Croatia; *Marija Vrdoljak*, University of Split, Croatia; *Winton Afrić*, Croatian Telecom, Croatia

Environmental Information Systems
Valentina Valenteković, Croatian Telecom, Croatia; *Marija Vrdoljak, Nikola Rožić*, University of Split, Croatia; *Gorazd Kandus*, Jozef Stefan Institute, Slovenia

Measure of Pulmonary X-Ray Image Compression Quality
Igor Vujović, Vlasta Zanchi, *Ivica Kuzmanić,* University of Split, Croatia; *Mirjana Vujović*, Center for Professional Medicine, Croatia

SOCIAL PROGRAM

Split
Guided Tour of the Diocletian Palace

Visit one of the UNESCO's World Heritage sites, magnificent Diocletian palace in Split. Expert guides will show and explain the most interesting facts about the history of the palace and the Split itself. Also, the world oldest cathedral built on top of the Diocletian's mausoleum is the place to visit. From the top of the cathedral the most beautiful view of the city is possible.

Tuesday, October 10
14:30 – 15:45
Price: free

Venice

One of the most famous cities in the world awaits for you to explore. Places to visit include Piazza San Marco, Ponte di Rialto, Burano and Santa Maria della Salute. We believe you'll find many others in this jewel of the Adriatic. However, be careful not to be carried away and miss the ship.

Friday, October 13
14:30 – 19:00

Dubrovnik
Guided Tour of the Old City

See the Old City of Dubrovnik and enjoy the guided tour around the famous city walls. Also not to be missed is the famous coffee in one of the small cafeterias on the Stradun.
The bus to Dubrovnik leaves at 09:00 (depending on the participants' interest) and reaches Dubrovnik some 3 hours later. The return to Split is scheduled at 22:00 hours.

Saturday, October 14
09:00 – 19:00
Price: Kn 300