Agenda and list of participants for the 10th COST 290 meeting

Wi-QoST: Traffic and QoS Management in Wireless Multimedia Networks

Technische Universität Wien
Wien, Austria
October 1 – 2, 2007

Day 1: Technische Universität Wien, Gußhausstraße 25/389, room EI6, 6th floor

Monday, October 1, 8:30 – 9:00. Registration.

Monday, October 1, 9:00. Welcome address by Michal Ries.

Monday, October 1, 9:05 – 11:05. Management Committee meeting.

1. Welcome
2. Greetings from Chairman
3. Approval of the agenda
4. Update on the Action (delivered by the Chairman)
   - Status of the Action, signatories
   - Report on the budget for the 3rd operational year
   - STMS update
   - Other MC business
5. Budget for the 4th operational year
6. ESF COST office presentation: Sophie Beaubron (10 min)
7. Report on activity of "COST 290 WiMAX Special Interest Group"
   - Thomas M. Bohnert (UoC, Portugal), 15 min
8. Discussion of the final report
   - Final Report review
9. AOB

Monday, October 1, 11:05 – 11:35. Coffee break.

Monday, October 1, 11:35 – 12:00. Technical Sessions.

Technical Session 1: Cross-Layering, Chair: Wolfgang Karner

TD(07)043: *Cross-layer performance control of wireless channels*, Dmitri Moltchanov (Tampere Univ. of Technology, Finland)

Monday, October 1, 12:00 – 13:00. Invited talk.

Prof. Markus Rupp (TU Wien, Austria): *Error Resilient Transmission of Video over Mobile Networks*.

Monday, October 1, 13:00 – 14:00. Lunch.

Monday, October 1, 14:00 – 15:00. Invited talk.

Dr. Peter Reichl (ftw, Austria): *Towards Future Communications: Architectures, Economics, and User Behaviour*.

Monday, October 1, 15:00 – 16:15. Technical Sessions

Technical Session 2: UMTS, Chair: Philip Svoboda

TD(07)033: *Performance evaluation of TCP over HSDPA based on measurements*, Manuel Alvarez-Campana (UPM, Spain)

TD(07)044: *Flow-level performance comparison of packet scheduling schemes for UMTS EUL*, Desislava Dimitrova (Univ. of Twente, The Netherlands)

TD(07)046: *Cost/Revenue Optimisation of Multi-service Cellular Planning for Business Centre E-UMTS*, Orlando Cabral (Univ. of Beira Interior, Portugal)

Monday, October 1, 16:15 – 16:35. Coffee break.

Monday, October 1, 16:25 – 17:40. Technical Sessions

Technical Session 3: VANETs, Chair: Luca Superiori

TD(07)032: *Evaluation of an Intelligent Route Guidance System based on Inter-vehicle Communication*, Shabnam Aprin (Lund University, Sweden)

Technical Session 4: Power Saving, Chair: Luca Superiori

TD(07)040: *Impact of Energy Models on Energy Efficient Sensor Network Routing*, Barbara Staehle, (University of Würzburg, Germany)

TD(07)034: *Power Saving in Wireless Multi-hop Networks*, Torsten Braun (University of Bern, Switzerland)

Monday, October 1, 17:40 – 18:55. Technical Sessions

Technical Session 5: Teletraffic Theory, Chair: Martin Wrulich

TD(07)035: *Offered Traffic Concepts in the Overall Network Teletraffic Theory*, Stoyan Poryazov (IMI – Bulgarian Academy of Science, Bulgaria)

Technical Session 6: Wide Area Networks, Chair: Martin Wrulich

TD(07)038: Heraklion MESH: *An Experimental Metropolitan Multi-Radio Mesh Network*, Vasilios Siris (FORTH-ICS, Greece)

TD(07)047: *Design and Planning of IEEE 802.16 Networks*, Fernando Velez (Univ. of Beira Interior, Portugal)

Monday, October 1, 19:30 –

Dinner organized by the host

Day 2: Technische Universität Wien, Gußhausstraße 25/389, room EI6, 6th floor

Tuesday, October 2, 9:00 – 10:00. Invited talk.

Dr. Alexander Sayenko (Nokia Research Center, Finland): *Resource and power management in the broadband wireless systems*.

Tuesday, October 2, 10:00 – 10:30. Coffee break.

Tuesday, October 2, 10:30 – 13:00. Technical Sessions

Technical Session 7: WiMAX

TD(07)049: *Optimization of contention resources for best-effort scheduling type in WiMAX*, Alexey Vinel (State University of Aerospace Instrumentation, Russia)

Technical Session 8: Traffic Delivery Issues

TD(07)042: *Joint Admission Control and VoIP Codec Selection Policies in WLANs*, Boris Bellalta (Univ. Pompeu Fabra, Spain)

TD(07)031: *Delivering Adaptive Scalable Video over the Wireless Internet*, Vasos Vassiliou (University of Cyprus, Cyprus)

TD(07)039: *Information model of network throughput with the application of unary code*, Jana Uramova (Univ. of Zilina, Slovakia)

TD(07)030: *An Experimental Investigation of the Congestion Control used by Skype*, Saverio Mascolo (Politecnico di Bari, Italy)

Technical Session 9: QoS Monitoring

TD(07)048: *MINER: Measurement Infrastructure for Network Research*, Florian Floimair (Salzburg Research, Austria)

Tuesday, October 2, 13:00 – 14:00. Lunch.

Tuesday, October 2, 14:00 – 15:40. Technical Sessions

Technical Session 10: IEEE 802.11e networks

TD(07)045: *Simulation of IEEE 802.11e in the context of interoperability*, Fernando Velez (Univ. of Beira Interior, Portugal)

TD(07)037: *Performance of Wireless IEEE 802.11e-Based Devices with Multiple Hardware Queues*, Gabriel Lazar (Technical University of Cluj-Napoca, Romania)

Technical Session 11: Mobility and related issues

TD(07)041: *MAP selection algorithms based on future movement prediction capability*, Anderj Vilhar (Jozef Stefan Institute, Slovenia)

TD(07)036: *A Component-based Analysis of the Mobile Ipv6 Handover from the Applications' Perspective*, Zinon Zinonos (University of Cyprus, Cyprus)

List of delegates

	Name	Country	Organization	MC	Presentation title
1	Michal Ries	Austria	INTHFT – TU Wien		
2	Peter Reichl	Austria	ftw		Invited talk: Towards Future Communications: Architectures, Economics, and User Behaviour
3	Markus Rupp	Austria	TU Wien		Invited talk: Wireless Multimedia
4	Florian Floimair	Austria	Salzburg Research		TD(07)048: MINER: Measurement Infrastructure for Network Research
5	Sophie Beaubron	Belgium	ESF COST office		Presentation at MCM
6	Seferin Mirtchev	Bulgaria	Technical University of Sofia	X	
7	Stoyan Poryazov	Bulgaria	IMI – Bulgarian Academy of Science	X	TD(07)035: Offered Traffic Concepts in the Overall Network Teletraffic Theory
8	Emiliya Saranova	Bulgaria	College of Telecommunications and Post		
9	Maja Matijasevic (subs. D. Begusic)	Croatia	Univ. of Zagreb, FER	X	
10	Vasos Vassiliou (subs. A. Pitsillides)	Cyprus	University of Cyprus	X	TD(07)031: Delivering Adaptive Scalable Video over the Wireless Internet
11	Zinon Zinonos (subs. C. Chrysostomou)	Cyprus	University of Cyprus	X	TD(07)036: A Component-based Analysis of the Mobile IPv6 Handover from the Applications' Perspective
12	Yevgeni Koucheryavy	Finland	Tampere Univ. of Technology	X	
13	Dmitri Moltchanov (subs. J.Harju)	Finland	Tampere Univ. of Technology	X	TD(07)043: Cross-layer performance control of wireless channels
14	Jorma Virtamo	Finland	Helsinki Univ. of Technology	X	
15	Alexander Sayenko	Finland	Nokia Research Center		Invited talk: Resource and power management in the broadband wireless systems

16	Dirk Staehle (subs. P. Tran-Gia)	Germany	University of Würzburg	X	
17	Barbara Staehle	Germany	University of Würzburg		TD(07)040: Impact of Energy Models on Energy Efficient Sensor Network Routing
18	Zigmund Orlov	Germany	University of Stuttgart		
19	Vasilios Siris	Greece	FORTH-ICS	X	TD(07)038: Heraklion MESH: An Experimental Metropolitan Multi-Radio Mesh Network
20	Panagiotis Papadimitriou (subs. V. Tsaoussidis)	Greece	Democritus University of Thrace	X	
21	Ivan Ganchev (subs. M. O'Droma)	Ireland	University of Limerick	X	
22	Giovanni Giambene	Italy	Univ. Of Siena	X	
23	Saverio Mascolo	Italy	Politecnico di Bari	X	TD(07)030: An Experimental Investigation of the Congestion Control used by Skype
24	Algimantas Kajackas	Lithuania	Vilnius Technical University	X	
25	Hans van den Berg	The Netherlands	TNO ICT	X	
26	Geert Heijenk (subs. R. Litjens)	The Netherlands	Univ. of Twente	X	
27	Desislava Dimitrova	The Netherlands	Univ. of Twente		TD(07)044: Flow-level performance comparison of packet scheduling schemes for UMTS EUL
28	Ivar Jardar Aasen	Norway	NTNU		ESF COST Rapporteur
29	Edmundo Monteiro	Portugal	University of Coimbra	X	
30	Fernando Velez	Portugal	Univ. of Beira Interior	X	TD(07)045: Simulation of IEEE 802.11e in the context of interoperability TD(07)047: Design and Planning of IEEE 802.16 Networks
31	Orlando Cabral	Portugal	Univ. of Beira Interior		TD(07)046: Cost/Revenue Optimisation of Multi-service Cellular Planning for Business Centre E-UMTS

32	Thomas Bohnert	Portugal	University of Coimbra		WiMAX SG activity report
33	Virgil Dobrota	Romania	Technical University of Cluj-Napoca	X	
34	Eduard Popovici (subs. T. Radulescu)	Romania	Technical University of Cluj-Napoca	X	
35	Gabriel Lazar	Romania	Technical University of Cluj-Napoca		TD(07)037: Performance of Wireless IEEE 802.11e-Based Devices with Multiple Hardware Queues
36	Alexey Vinel (subs. V. Efimushkin)	Russia	State University of Aerospace Instrumentation	X	TD(07)049: Optimization of contention resources for best-effort scheduling type in WiMAX
37	Martin Klimo	Slovakia	Univ. of Zilina	X	
38	Katarina Bachrata	Slovakia	Univ. of Zilina		
39	Jana Uramova	Slovakia	Univ. of Zilina		TD(07)039: Information model of network throughput with the application of unary code
40	Juraj Smiesko	Slovakia	Univ. of Zilina		
41	Gorazd Kanduz	Slovenia	Jozef Stefan Institute	X	
42	Andrej Vilhar	Slovenia	Jozef Stefan Institute		TD(07)041: MAP selection algorithms based on future movement prediction capability
43	Francisco Barcelo	Spain	UPC	X	
44	Manuel Alvarez-Campana	Spain	UPM	X	TD(07)033: Performance evaluation of TCP over HSDPA based on measurements
45	Boris Bellalta	Spain	Univ. Pompeu Fabra		TD(07)042: Joint Admission Control and VoIP Codec Selection Policies in WLANs
46	Torsten Braun	Switzerland	University of Bern	X	TD(07)034: Power Saving in Wireless Multi-hop Networks
47	Burkhard Stiller	Switzerland	Univ. of Zurich	X	
48	Shabnam Aprin (subs. M. Kihl)	Sweden	Lund University	X	TD(07)032: Evaluation of an Intelligent Route Guidance System based on Inter-vehicle Communication
49	Andreas Kassler	Sweden	Karlstad University	X	

Invited Speakers Short Bios and Abstracts

"*Error Resilient Transmission of Video over Mobile Networks*"
Prof. Dr. M. Rupp, Vienna University of Technology, Austria

Abstract

The deployment of third generation mobile networks enabled new real-time multimedia services like video call, conferencing and streaming. The real-time nature of these services excludes the possibility of end-to-end retransmissions. Therefore, errors affecting the quality of the received service are inevitable. The aim of error resilience methods is to minimize the impact of errors on the end-user quality.
In this talk, the effect of errors at different positions in the video stream and the possibility of their detection will be discussed. Typically, within an IP video stream, the presence of errors in one IP packet can be detected by means of a simple checksum. Thus, the IP packet size determines the resolution of the error detection. In order to reduce the rate increase due to packet headers, the IP packets are rather large and their loss results in a loss of a considerable part of a picture. Currently, the erroneous IP packets are discarded at the receiver and the corresponding missing parts of the video sequence are concealed. However, the discarded IP packets may still contain correctly received information. If this information is used additionally, an essential improvement in the end-user quality can be obtained. If the access network technology is known, an appropriate cross-layer design enables easier error detection and allows for further improvements of error resilience. In this talk, the UMTS access network is focused. Error resilience methods can be further improved by an appropriate scheduling of the video stream. Here, link-error aware and distortion-aware concepts and their combinations will be discussed and their performance demonstrated.

Bio

Markus Rupp received his Dipl.-Ing. degree in 1988 at the University of Saarbruecken, Germany and his Dr.-Ing. degree in 1993 at the Technische Universitaet Darmstadt, Germany, where he worked with Eberhardt Haensler on designing new algorithms for acoustical and electrical echo compensation. From November 1993 until July 1995 he had a postdoctoral position at the University of Santa Barbara, California with Sanjit Mitra where he worked with Ali H. Sayed on a robustness description of adaptive filters with impacts on neural networks and active noise control. From October 1995 until August 2001 he was a member of the Technical Staff in the Wireless Technology Research Department of Bell-Labs where he was working on various topics related to adaptive equalization and rapid implementation for IS-136, 802.11 and UMTS. He is presently a full professor for Digital Signal Processing in Mobile Communications at the Technical University of Vienna. He was associate editor of IEEE Transactions on Signal Processing from 2002-2005, is currently associate editor of JASP EURASIP Journal of Applied Signal Processing, and of JES EURASIP Journal on Embedded Systems and is elected AdCom member of EURASIP. He authored and co-authored more than 200 papers and patents on adaptive filtering, wireless communications and rapid prototyping as well as automatic design methods.

"Towards Future Communications: Architectures, Economics, and User Behaviour"
Dr. Peter Reichl (ftw, Austria)

Abstract

Telecommunications research can no longer be considered to be pure communications engineering. The convergence of fixed-line and mobile telephony with Internet technology and rapid service creation approaches has made economic efficiency and user acceptance/usability to crucial factors for the success of the telecommunication business as such. In the emerging new paradigm, a holistic view onto the entire value chain from basic architectural design decisions over convergent service and application creation up to the customer has become indispensable. The resulting interdisciplinary perspective on future communication offers a wide variety of important and interesting research topics, ranging from disruptive technologies and Next Generation Media architectures over the application of economic concepts to networking problems ("Internet Economics") and the resulting business models to efficient assessment methods for user perceptual QoS and the evaluation of new interface and interaction technologies with the end customer. This talk will provide a survey on this

multidisciplinary research area. After a brief introduction into general trends in telecommunications, we start with recent activities in the area of Next Generation Networks (NGN) and describe an open-source testbed for 3G IMS (IP Multimedia Subsystem). The problems related to IMS charging lead us immediately to the more general topic of Internet Economics as a new paradigm for understanding communication networks as economical rather than technical systems. We discuss recent proposals for QoS-based charging and congestion pricing, before we demonstrate how to use the underlying micro-economic theory of utility also for a quite different context, i.e. for deriving a novel metric for the interactivity of VoIP conversations. The results serve as prerequisite for perceptual quality tests performed in our HTI (Human - Telecommunication Systems Interaction) Lab. Finally, we introduce LiLiPUT (Lightweight Lab Equipment for Portable User Testing) as a recent extension of this lab which allows flexible user test of future mobile applications "in the wild". The talk concludes with a summary and some perspectives on future research.

Short Bio

Peter Reichl has studied mathematics, physics and philosophy in Munich and Cambridge (UK). After receiving his diploma he was member of the scientific staff at RWTH Aachen, Bell Labs (Murray Hill, NJ), and ETH Zurich, where he finished his PhD thesis on tariff and traffic modeling for the Internet. Since 2001, he is working as Key Researcher at the Telecommunications Research Center Vienna (ftw.), being responsible for the research area "Economic and User Aspects of Telecommunications" and leading several strategic and application-oriented projects in the areas of Internet Economics, Human-Computer Interaction, wireless networks and 3GPP IMS. Dr. Reichl has published more than 70 scientific papers in the areas of Internet Economics, mobile and wireless networks, user-perceived QoS, traffic engineering, network management and performance evaluation. From 2001 to 2006, he served as co-chair of the annual international workshop series on "Internet Charging and QoS Technology" (ICQT, http://www.ftw.at/icqt) and was active as co-editor of several special journal issues on Internet Economics, e.g. with the Journal of Computer Communications and the Journal of Computer Networks. His teaching experience includes a variety of tutorials for an industry-related audience at FTW as well as academic courses, e.g. as Distinguished Guest Lecturer on "Fundamentals of Telecommunication Economics" at TU Graz.

"Resource and power management in the broadband wireless systems"
Dr. Alexander Sayenko (Nokia Research Center, Finland)

Abstract

The tremendous development of Internet services create new challenges for communication systems that should be capable of transmitting large amount of data and ensuring all the QoS requirements. While accessing these services, users are willing to be independent of a particular location, which results in new technical challenges for the mobile wireless systems. They are not considered only as a technical mean to make voice calls, but rather as a communication medium over which various services can run. In this case, support for QoS and efficient resource management are inevitable. This talk will provide a survey of the scheduling and resource management solutions in the broadband wireless networks.
We will consider typical resource allocation problems and QoS solutions, whereas IEEE 802.16 technology will be used as an example. We will present an QoS model of the broadband wireless systems, available QoS scheduling classes, and possible mapping of services onto these classes. The scheduling mechanism applied at the base station and at the subscriber station side (a so-called uplink scheduler) will be considered, and a special emphasis will be given to a tradeoff between a complexity and efficiency. Since it is often the case that ensuring the QoS requirements results in a less efficient resource allocation, we will discuss the usage of the uplink contention mechanisms and multicast polling that can improve resource utilization while supporting services, such as VoIP. Since scheduling depends heavily on the underlying MAC level frame, we will highlight IEEE 802.16 OFDM and OFDMa frames and their internal structures. As an example, we will show typical steps involved in the construction of the OFDMa frame. Finally, we will elaborate on power management, which is one of the most critical problems for mobile terminals with limited power resources.

Bio

Alexander Sayenko obtained the BSc degree from the Kharkov State University of RadioElectronics in 2001. In 2002, he received the MSc degree from the University of Jyväskylä, Finland. After enrolling to the PhD program, he focused on scheduling, the QoS and network management mechanisms for the core wired networks. He is an author of the WRR and DRR scheduler for the NS-2 simulator, as well as a maintainer of the WFQ queuing discipline. Besides, he contributed implementations of several signaling protocols, such as COPS and aggregated RSVP. While working on the signaling solutions, he took part in the IETF NSIS and TS WGs. In 2005, he finished his PhD thesis on adaptive scheduling solutions for the QoS networks. While working for the University of Jyväskylä, Alexander Sayenko lectured courses on hardware sensitive programming and programming for mobile terminals. Starting from 2007, he works for Nokia Research Center as a senior research engineer. His responsibility is terminal architectures and the resource and power management solutions for mobile terminals. In parallel, he takes part in the development of the 802.16 module for the NS-2 simulator, as well as 802.16 performance evaluation and its further development. Alexander Sayenko has published more than 20 scientific papers in the areas of network management, QoS, and resource management in the wired and wireless networks.