COST DC ICT

Information and

Communications

Technology

COST Action 290

Traffic and QoS Management in Wireless Multimedia Networks (WI-QOST)

FINAL REPORT

Period: from July 1, 2004 to June 30, 2008

<u>CONTENTS</u>

1. OVERVIEW: ACTION IDENTIFICATION DATA

COST Action *290*

Title: Traffic and QoS Management in Wireless Multimedia Networks (WI-QOST)

TC Recommendation: *14/02/2003*		**First MC meeting:** *04/06/2004*	
CSO Approval: *04/12/2003*		**Last MC meeting:**	
Start date: *10/03/2004* [1]		**Final Report:**	
Duration: *48 months*		**Evaluation Report:**	
Extension:		**DC Evaluation:**	
End date: *03/06/2008*			

Number of signatories: *24*

Signatories and date of signature: *(day/month/year)*

Austria	*15/06/2004*	Greece	*04/06/2004*	Poland	
Belgium	*24/09/2004*	Hungary		Portugal	*02/06/2004*
Bulgaria	*10/05/2004*	Iceland		Romania	*27/04/2004*
Croatia	*19/07/2004*	Ireland	*10/03/2004*	Slovakia	*11/06/2004*
Cyprus	*10/03/2004*	Italy	*11/03/2004*	Slovenia	*26/08/2004*
Czech Rep.		Latvia		Spain	*22/06/2004*
Denmark		Lithuania	*15/12/2004*	Sweden	*28/09/2004*
Estonia		Luxembourg		Switzerland	*18/03/2004*
Finland	*25/03/2004*	Malta	*25/05/2004*	Turkey	*05/04/2005*
France	*22/06/2004*	Netherlands	*10/03/2004*	United Kingdom	*10/03/2004*
Germany	*10/03/2004*	Norway	*22/03/2004*		

Institutes of non-COST countries: *(list)*

Area: Networks

Action Web site: http://www.cost290.org

Chairperson:

Title, name	*Dr.Yevgeni Koucheryavy*	*Tel.:+358 40 7710619*
Affiliation	*Tampere Univ. of Tech.*	*Fax: +358 3 31154988*
Postal Address	*Korkeakoulunkatu 1*	*E-Mail: yk@cs.tut.fi*
P.O. code, City	*P.O.Box 553, 33101, Tampere*	
Country	*Finland*	

DC Rapporteur: *Ivar Jardar Aasen, Norway*

External Evaluator: *Carla Chiasserini, Italy*

2. OBJECTIVES

The main objective of the Action was to evolve, develop and investigate new approaches, techniques, methods, models, strategies and tools for the analysis, design, control and evaluation of future advanced *Multiservice Wireless Networks* (MWNs) supporting user mobility, multimedia applications, and internetworking. Special attention was given to QoS and related aspects in both access networks and core networks in the presence of mixed multimedia traffic. To accomplish these tasks new analytical tools, software implementations and prototypes had to be invented. These objects were considered as the main focus of the Action.

The Action was also expected:

- To increase the knowledge on the MWNs and specifically on traffic nature and behavior and its impact on network architecture, performance and planning.

- To use the Pan-European infrastructure of the COST Action to execute and to perform international testbeds and, therefore, to produce valuable outcome; it should be emphasized that the most of participants possess own local testbeds, lack of coordination between participants prevent proper results dissemination.

- To contribute to standardization bodies on the basis of the obtained achievements by creating inputs leading to well supported decisions.

- To coordinate the research relations, and foster research networking, between European participating organizations and research groups being active in the field. The COST Action also contributed with its research results to existing and particularly relevant worldwide events, such as conferences and symposia.

- To pursue industry and service provider links and establish links on a wide scale. All the participants maintain contacts and contracts to industry partners with consequent collaboration.

The activities carried out in this Action brought benefits not only at the national level, but also at the European one. The results contributed to strengthen the European research activities in these fields and to define innovative approaches for the QoS provision in the presence of multimedia traffics in mobile networks.

3. TECHNICAL DESCRIPTION AND IMPLEMENTATION

The work of this COST Action concerned different interrelated aspects for future MWNs. In particular, important research tasks to be addressed were: the analysis of the impact of multi-class traffics on network design and dimensioning; the definition of techniques to provide adequate QoS differentiation among traffic classes; the identification of new network planning criteria to cope with the integration of heterogeneous traffic flows; the definition of new services able to provide the requested multimedia contents to users on the move.

During the first MC meeting the Management Committee approved several important internal operational rules and policies that are described below.

3.1 Working Groups

COST Action 290 has been arranged into four working groups described below.

Working Group 1: Traffic Engineering, Leader: Dirk Staehle from University of

Wuerzburg, Wuerzburg, Germany
WG1 area covered the following topics:
- Traffic characterization and modelling;
- Mapping of QoS classes and SLA/SLS;
- Resource management and QoS provision;
- Congestion control;
- Cross-layer design;
- Transport protocols over wireless;
- MAC layer protocols and algorithms;
- Performance evaluation.

Working Group 2: Mobility and interoperability, Leader: Prof. Francisco Barcelo from UPC, Barcelona, Spain
WG2 area covered the following topics:
- Mobility characterization;
- Location awareness;
- Handover techniques;
- IP mobility protocols;
- Interworking between different access technologies;
- QoS and mobility;
- Privacy and security.

Working Group 3: Network architecture and planning, Leader: Prof. Torsten Braun from University of Bern, Bern, Switzerland
WG3 area covered the following topics:
- Network planning;
- Capacity dimensioning;
- Evolution of network architecture;
- Self organization;
- Service architectures;
- Over-dimensioning and resilience;

Working Group 4: Services, regulations, and economic aspects, Leader: Prof. Vasilios Siris from FORTH, Heraklion, Greece
WG4 area covered the following topics:
- Economics and regulation;
- New techno-business models, novel pricing and billing mechanisms;
- Self-regulated wireless use;
- Optimization based in cost/revenues aspects;
- Charging and accounting;
- Applications requirements and scenarios.

3.2 Special Interest Groups

During the COST 290 lifetime, new technologies have arrived to the telecommunications market. Broadband wireless access technology WiMAX based on IEEE 802.16 standards have been developed and launched. However, although the first products are on the market, this wireless access technology is still in its infancy; many of the open issues have been intentionally left out in standards from one hand, and manufacturers are working to come up with proprietary solutions. Many projects

have been initiated on the topic. Therefore, it has been decided to set up the WiMAX Special Interest Group (SIG). The group has been chaired by Thomas M. Bohnert (University of Coimbra, Portugal) because of his deep knowledge of the technology and his involvement in the IST FP6 "WiMAX Extensions for Isolated Research and Data Networks (WEIRD)" project.

3.3 Assessment of original research agenda

In the early years of the twenty-first century, mankind has witnessed the spectacular growth of wireless and mobile communications all around the world and the dramatically increasing interest for it. New technologies, telecommunication services and applications have been the strong drive of this progress, and they posed new requirements to network design and construction issues.

It was anticipated, and today it is viewed as an ultimate truth, that the most important, value-added and revenue-expected new services for the wireless network are Internet access and *Internet Protocol* (IP) multimedia applications. As it has been shown in a number of R&D projects held by 2002 and it is still an open issue, on the basis of a plain fixed Internet access it is possible to implement a set of brand-new applications for which certain *Quality of Service* (QoS) requirements need to be provided. No doubt, QoS for wireless Internet applications and services is heavily demanded by end-users – indeed, with respect to the existing experience on the implementation of QoS within fixed networks, design, development and implementation of QoS-capable wireless networks is of paramount importance.

4. PARTICIPATION AND COORDINATION

4.1 Management Committee

Chair:
Dr. Yevgeni Koucheryavy, Tampere University of Technology, Finland

Vice-Chair:
Prof. Giovanni Giambene, University of Siena, Italy

MC Members:
Austria
    Dr. Ilka MILOUCHEVA, Salzburg Research
    Prof. Ulla BIRNBACHER, Graz University of Technology
Belgium
    Prof. Chris BLONDIA , Universiteit Antwerpen, PATS
    Dr. Ingrid MOERMAN, Ghent University, INTEC
Bulgaria
    Dr. Stoyan PORYAZOV, Institute of Mathematics and Informatics, Bulgarian Academy of Science
    Prof. Seferin MIRTCHEV, Technical University of Sofia
Croatia
    Prof. Nikola ROZIC, University of Split
    Prof. Dinko BEGUSIC, University of Split

Cyprus
   Dr. Andreas PITSILLIDES, University of Cyprus
   Dr. Chrysostomos CHRYSOSTOMOU, University of Cyprus
Finland
   Prof. Jarmo HARJU, Tampere University of Technology
   Dr. Yevgeni KOUCHERYAVY, Tampere University of Technology
France
   Prof. Pascal LORENZ, Universite de Haute Alsace
   Prof. Daniel KOFMAN, ENST
Germany
   Prof. Phuoc TRAN-GIA, University of Wuerzburg
   Prof. Adam WOLISZ, Technical University of Berlin
Greece
   Prof. Vassilis TSAOUSIDIS, Demokritos University of Thrace
   Dr. Vasilios A. SIRIS, FORTH
Ireland
   Dr. Sean McGRATH, University of Limerick
   Dr. Mairtin O'DROMAUniversity of Limerick
Italy
   Dr. Giovanni GIAMBENE, University of Siena
   Prof. Saverio MASCOLO, Politecnico di Bari
Lithuania
   Prof. Algimantas Kajackas, Vilnius Gediminas Technical University
Malta
   Mr. Ernest CILIA, MTRI
   Mr. Vadim OPESKINE, Gozo Technopark
Netherlands, The
   Dr. J. L. Van den BERG, TNO ICT
   Dr. Remco LITJENS, TNO ICT
Norway
   Prof. Peder EMSTAD, Norwegian University of Science and Technology
Portugal
   Prof. Fernando VELEZ, University of Beira Interior,
   Prof. Edmundo MONTEIRO, University of Coimbra
Romania
   Prof. Virgil DOBROTA, Technical University of Cluj-Napoca
   Prof. Tatiana RADULESCU, Polytechnical University Bucharest
Slovakia
   Dr. Martin KLIMO, University of Zilina
Slovenia
   Prof. Kandus Gorazd, Institute Jozef Stefan
Spain
   Prof. Manuel ALVAREZ-CAMPANA, Universidad Politecnica de Madrid
   Prof. Francisco BARCELO, Universitat Politecnica de Catalunya
Sweden
   Prof.Maria Kihl, Lund Institute of Technology
   Prof. Andreas Kassler, Karlstad University
Switzerland
   Prof. Torsten BRAUN, University of Bern
   Prof. Burkhard STILLER, University of Zurich

Turkey
    Prof. Buyurman Baykal, Middle East Technical University
UK
    Prof. Khalid AL-BEGAIN, University of Glamorgan
    Prof. George PAVLOU, University of Surrey

4.2 Participating Institutions

Australia
    La Trobe University
Austria
    Salzburg Research
    Vienna University of Technology
    Graz University of Technology
Belgium
    University of Antwerp
    University of Gent
Bulgaria
    Bulgarian Academy of Sciences, Institute of Mathematics and Informatics
Croatia
    University of Split
    University of Zagreb
Cyprus
    University of Cyprus
Finland
    Tampere University of Technology
    Helsinki University of Technology
France
    University of Haute Alsace
    ENST
Germany
    University of Stuttgart
    Technical University of Berlin
    Braunschweig University of Technology
    Fraunhofer FOKUS / University of Tubingen
    University of Passau
    University of Wuerzburg, Germany
    DoCoMo Euro-Labs
    IMST GmbH
Greece
    Demokritos University of Thrace
    University of Crete and ICS-FORTH
Ireland
    University of Limerick
Italy
    University of Siena
    Politecnico di Bari
    Quinary
    University of Napoli "Federico II"

Lithuania
Vilnius Gediminas Technical University
Malta
MTRI
Netherlands, The
TNO ICT
University of Twente
Norway
Norwegian University of Science and Technology
Portugal
University de Beira Interior
University of Coimbra
Romania
Technical Univ. of Cluj-Napoca
Polytechnical University Bucharest
Russia
R&D ZNIIS, Moscow
Slovakia
University of Zilina
Slovenia
Institute Jozef Stefan
Spain
Universidad Politcnica de Madrid
Universitat Pompeu Fabra
Technical University of Catalonia
University of Malaga
Universidad de Castilla La Mancha
Sweden
Lund Institute of Technology
Karlstad University
Switzerland
University of Bern
University of Zurich
Turkey
Middle East Technical University
UK
Queen Mary & Westfield College, University of London
School of Computing, University of Glamorgan
University of Cambridge
University of Surrey
City University, London

4.3 Meetings of the Management Committee

1st MC meeting: October 7-8, Gozo, Malta

2nd MC meeting: February 3-4, Colmar, France

3rd MC meeting: May 11-13, Xanthi, Greece

4th MC meeting: October 13-14, Wuerzburg, Germany

5th MC meeting: February 9-10, Delft, The Netherlands

6th MC meeting: May 9-10, Bern, Switzerland

7th MC meeting: September 29 – 30, 2006, Split, Croatia

8th MC meeting: February 15 – 16, 2007, Malaga, Spain

9th MC meeting: May 22 – 23, 2007, Coimbra, Portugal

10th MC meeting: October 1 – 2, 2008, Vienna, Austria

11th MC meeting: May 27 – 28, 2008, Tampere, Finland

4.4 Meetings of the Working Groups and SIG

Working Groups and SIG meetings normally took place together with the Management Committee meetings. As MC members were active participants in the technical activities of the Action, it made economic sense to combine technical meetings with management ones. A regular Action meeting consisted of MC meeting, technical meeting, WG sessions and SIG meeting in parallel.

4.5 Short-term scientific missions

One STSM took place during *the first operational* year of the Action. The Management Committee made the decision to create a STSM evaluation group consisting of four senior experts chaired by the Vice-Chair of the Action, as detailed below:

Dr. Giovanni Giambene, University of Siena, Italy;
Prof. Vasilios Siris, FORTH, Greece;
Prof. Saverio Mascolo, Politecnico di Bari, Italy;
Prof. Pascal Lorenz, Université de Haute Alsace, France;
Prof. Manuel Alvarez-Campana, Universidad Politecnica de Madrid, Spain.

In total 12 STSMs were performed. For details see Annex B.

4.6 Publications resulting from STSMs

1. O. Cabral, F.J. Velez, G. Hadjipollas, M. Stylianou, J. Antoniou, V. Vassiliou and A. Pitsillides, "Optimisation of Indoor Mobile B3G Systems Based in Economic Aspects," in Proc. of IEEE SCVT' 2005 - 12th Annual Symposium on Communications and Vehicular Technology in the Benelux, Enschede, Netherlands, Nov. 2005.

2. O. Cabral, F.J. Velez, G. Hadjipollas, M. Stylianou, J. Antoniou, V. Vassiliou and A. Pitsillides, "Enhanced UMTS Cost/Revenue Optimisation in Offices Scenarios," in Proc. of 3G 2005 - 6th IEE International Conference on 3G Mobile Communication Technologies, London, UK, Oct. 2005.

3. Orlando Cabral, Fernando J. Velez, George Hadjipollas, Marinos Stylianou, Josephina Antoniou, Vasos Vassiliou, Andreas Pitsillides, "Enhanced UMTS

Simulation-based Planning in Office Scenarios," EW' 2006 - 12th European Wireless Conference, Athens, Greece, Apr. 2006.

4. O. Cabral, F.J. Velez, G. Hadjipollas, M. Stylianou, J. Antoniou, V. Vassiliou and A. Pitsillides, "Enhanced UMTS Cellular Planning for Multiple Traffic Classes in Offices Scenarios," in Proc. of PIMRC2006 - 17th Annual IEEE International Symposium on Personal, Indoor and Mobile Radio Communications, Helsinki, Finland, Sep. 2006.

5. I. Alocci, G. Giambene, Y. Koucheryavy, Optimization of the Transport Layer Performance in a Wireless System based on the IEEE 802.11e Standard, International Symposium on Wireless Pervasive Computing 2007 (ISWPC2007), Porto Rico (USA), February 5-7, 2007.

6. T. M. Bohnert, Y. Koucheryavy, M. Katz, J. Jakubiak, E. Borcoci, E. Monteiro "On Evaluating a WiMAX Access Network for Isolated Research and Data Networks using NS-2", NEW2AN 2007, St.Petersburg, Russia, September 2007.

7. T. M. Bohnert, D. Staehle, G.S. Kuo, Y. Koucheryavy, E. Monteiro "Speech Quality Aware Admission Control for Fixed IEEE 802.16 Wireless MAN", IEEE ICC 2008.

8. T. M. Bohnert, E. Monteiro, Y. Koucheryavy, D. Moltchanov "Non-Parametric and Self-Tuning Measurement-based Admission Control", IFIP Networking 2007, Atlanta, USA.

9. Thomas Bohnert, Dirk Staehle, Edmundo Monteiro, "Speech Quality Aware Resource Control for Fixed and MobileWiMAX", in "WiMAX Evolution, Emerging Technologies and Applications", Marcos Katz and Frank Fitzek (Eds.), John Wiley and Sons, to appear in 2009.

5. RESULTS

See Annex A for details.

6. DISSEMINATION OF RESULTS

6.1 Publications and Reports

The number of participants, presentations and tutorial made during the MC meetings (MCMs) is listed below (excluding presentations at affiliated open workshop):

MCM	Participants	Presentations	Invited
1st MCM: October 7-8, 2004, Gozo, Malta	38	10	
2nd MCM: February 3-4, 2005, Colmar, France	43	19	1
3rd MCM: May 11-13, 2005, Xanthi, Greece	45	34	2

4th MCM: October 13-14, 2005, Wuerzburg, Germany	41	21	
5th MCM: February 9-10, 2006, Delft, The Netherlands	41	21	1
6th MCM: May 9-10, 2006, Bern, Switzerland	46	36	4
7th MCM: September 29 – 30, 2006, Split, Croatia	33	13	2
8th MCM: February 15 – 16, 2007, Malaga, Spain	47	20	2
9th MCM: May 22 – 23, 2007, Coimbra, Portugal	44	36	5
10th MCM: October 1 – 2, 2007, Vienna, Austria	49	20	4
11th MCM: May 27 – 28, 2008, Tampere, Finland	38	28	3
TOTAL	465	258	24

See Annex C contains the list of TDs.

6.2 Conferences and Workshops

6.2.1 First COST 290 workshop co-located with the WWIC 2005 conference, Wired/Wireless Internet Communications

The 1st COST 290 Workshop was organized in Xanthi, Greece on May 11-13, 2005 jointly with the 3rd MCM. The Workshop aimed at: increasing the spirit of cooperation between the researchers from different COST countries; presenting the results of the joint work of the first year of the COST 290; coordinating and boosting further research efforts; and making COST 290 results public through the WWIC conference. The following lectures have been delivered:

- Prof. Ian F. Akyildiz (Gatech, USA): New Advances in Sensor networks.
- Dr. M. Smirnov (Fraunhofer FOKUS, Germany): Autonomic Communication for Network Immunity and Performance.

Proceedings details: Springer Series: Lecture Notes in Computer Science , Vol. 3510. Braun, T.; Carle, G.; Koucheryavy, Y.; Tsaoussidis, V. (Eds.), 2005, XIV, 366 p., ISBN: 3-540-25899-X

6.2.2 Second COST 290 workshop co-located with the WWIC 2006 conference, Wired/Wireless Internet Communications

The 2nd COST 290 Workshop was organized in Bern, Switzerland on May 10-12, 2005 jointly with the 6th MCM. The Workshop aimed at: presenting the results of the

joint work of the second year of COST 290; coordinating the research agenda; and making COST 290 results public through the WWIC conference. The following lectures have been delivered:

- Sonia Fahmy (Purdue University, USA): Fidelity/Scalability Tradeoffs in Protocol Evaluation, http://www.iam.unibe.ch/~rvs/research/wwic2006/talks/wwic06_fahmy.pdf
- David Hutchison (Lancaster University, UK): Autonomic Networking: the way ahead?
- Thomas Plagemann (University of Oslo, Norway): Network and Protocol Support for Emergency and Rescue Applications.
- Laura Marie Feeney (Swedish Institute of Computer Science, Sweden): Synchronization problems in ad hoc and sensor networks, http://www.iam.unibe.ch/~rvs/research/wwic2006/talks/wwic06_feeney.pdf

Proceedings details: Springer Series: Lecture Notes in Computer Science , Vol. 3790, Torsten Braun, Georg Carle, Sonia Fahmy, Yevgeni Koucheryavy (Eds.), 2006, XIV, 336 p., ISBN 3-540-34023-8.

6.2.3 Third COST 290 workshop co-located with the WWIC 2007 conference, Wired/Wireless Internet Communications

The 3rd COST 290 Workshop was organized in Coimbra, Portugal on May 22-23, 2007 jointly with the 9th MCM. The Workshop aimed at: updating and coordinating the research agenda; making COST 290 results public through the WWIC conference; and celebrating the technical excellence achieved in three years. The following outstanding lectures have been delivered:

- Prof. Henning Schulzrinne (Columbia University, New York, USA): Principles and Lessons for a New Internet and 4G Wireless Networks.
- Prof. Nitin H. Vaidya (University of Illinois at Urbana-Champaign, USA): Multi-Channel Wireless Networks: Theory to Practice.

Proceedings details: Springer Series: Lecture Notes in Computer Science , Vol. 4517 Fernando Boavida, Edmundo Monteiro, Saverio Mascolo, Yevgeni Koucheryavy (Eds.), 2007, XIV, 377 p., ISBN 3-540-72694-2.

6.2.4 Fourth COST 290 workshop co-located with the WWIC 2008 conference, Wired/Wireless Internet Communications

The 4th COST 290 Workshop was organized in Tampere, Finland on May 28-30, 2008 jointly with the 11th MCM, the last MC meeting. The Workshop aimed at: summarizing COST 290 research achievements; making COST 290 results public through the WWIC conference. The following lectures have been delivered:

- Dr. Nestor Peccia (Consultative Committee for Space Data Systems (CCSDS), USA): Towards Interplanetary Internet, dream or utopia?
- Dr. Arto Karila (HIIT, Finland): Multi-Access in Regional Networks.

A special session on "Wireless Sensor/Actuator Networks and Cooperating Objects: Towards the Internet of Smart Things" has been organized with support of the EC.

Proceedings details: Springer Series: Lecture Notes in Computer Science, Vol. 5031, Jarmo Harju, Geert J. Heijenk, Peter Langendörfer, Vassilios Siris (Eds.), 2008, ISBN 978-3-540-68805-1.

6.3 Web site

The Grant Holder registered the domain www.cost290.org for the Action. The website contains all necessary information for the Action participants as well as for only visitors. It has public and password-protected areas. Most of documents are located in the public area, but some technical documents reflecting ongoing work and internal documents are placed in the password-protected area. STSM reports (technical and financial) are also available in the website.

6.4 Scientific and Technical Cooperation

Scientific and technical cooperation is a must for COST Actions. Actions constantly need improvements of visibility and dissemination of technical results. This can be done by various means, e.g. invited presentations at meetings, publishing of invited/informational paper, etc. Moreover, the establishment of technical contacts and even relations is of paramount importance within COST framework. COST 290 achieved credits by the following actions:

- COST 290 MC established contacts to a number of FP6 projects and COST Actions.

    o MC Chair Dr. Koucheryavy attended a MC meeting of COST 279 and delivered a talk on COST 290 activities; February 24, 2005.

- COST 290 members participated in the following IST FP6 projects and COST Actions: NoE E-NEXT, IP B-BONE, IP LIAISON, EUQoS, IP DIADALOS, NoE Euro-NGI, IP Ambient Networks, NoE SatNEx, NoE Kaleidoscope, NoE TARGET, IP MOME, and FP5 IP EMILY; COST 273, COST 279, COST 285, COST 289, COST 2100.

    o COST 290 members delivered technical presentations on research results achieved within those projects and Actions. This allowed COST 290 community to be aware about research topics and results carried out by other European researchers.

- Based on COST 290 community, the WG "ERCIM eMobility" has been created. The ERCIM eMobility Working Group aimed at developing a strategic basic research agenda and project proposals in the area of eMobility. To complement the activities of the eMobility European Technology Platform (ETP), the Working Group focused on more (theoretical) basic research issues. The goal was long-term research projects with a more academic background, without having any commercial constraints. It focused mainly on research addressing social, environmental problems and disruptive technologies. The

main research topics of the Working Group research were: Applications and Services, Middleware and Security, Network Architectures and Technologies, Protocols. Furthermore, the eMobility Working Group aimed at disseminating the research results in the field of mobile technologies and at organizing workshops and conferences in that area.

- Visiting teaching and examination activities within COST 290 community, e.g.

    o Prof. Giovanni Giambene (University of Siena) gave a lecture at Master International on Networks and Telecommunications (UPC, Spain), May 2008.

    o Fernando J. Velez "Design and Planning of WiMAX Networks at Performance Engineering Lab", School of Computer Science and Informatics, University College Dublin, Dublin, Ireland, April 2007.

    o Dr. Yevgeni Koucheryavy (TUT, Finland) acted as an opponent at the defense of PhD thesis of Mihal Ries (TUWien, Austria), October 2008.

    o Dr. Andreas Kassler (Karlstad University, Sweden) acted as member of the Doctoral Thesis Evaluation and the Doctoral Thesis Defense Committees for the PhD thesis of Lea Skorin-Kapov (University of Zagreb, Croatia), November 2007.

    o Students exchange agreements, e.g. between UPC (Spain) and University of Siena (Italy).

- Joint applications and projects

    o There have been a number of applications submitted within different frameworks such as COST, IST FP7, CELTIC, etc.

        ▪ E.g. EU-MESH (Enhanced, Ubiquitous, and Dependable Broadband Access using MESH Networks), ICT-215320, 7th Framework Programme. Participants include: FORTH-ICS (Coordinator) and Technical University of Berlin.

        ▪ E.g. follow-up national project based on the knowledge obtained through participation in COST 290: "Autonomous System for Observation of Quality of Service in Telecommunications Networks" (Vilnius Gediminas Technical University, Lithuania).

        ▪ "TelMAX: Broadband wireless professional communications services based on WiMAX", CENIT Program - Spanish Ministry of Science and Innovation (Universidad Politecnica de Madrid).

6.5 Transfer of results

The transfer of the results is deemed as a key issue showing how project's results are disseminated and transferred into a new knowledge instance. COST 290 managed to perform the transfer of results by the following means:

- Organization of special issues and editorials in journals and magazines addressing narrow topic from the Action's scope.

- Joint publications.

- Cooperation with established conferences by putting up special sessions, panel sessions, invited talks, etc.

- Establishment of new conferences, seminars and workshops based on the COST 290 community interests.

6.5.1 Special issues and editorials

The organization of special issues and editorials was deemed as an essential way to transfer results to the community. The following special issues and editorials were organized during the lifetime of the Action:

- Y. Koucheryavy, V.B. Iversen and J. Harju, Special issue of the Journal of Communications Software and Systems (JCOMSS) "Next Generation Teletraffic and Wired/Wireless Advanced Networking", ISSN 1845-6421, Vol.4, No.1, March 2008.

- G. Giambene, B.S. Yeo, R. Wang, Special issue of the Journal of Communications Software and Systems (JCOMSS) "Cross-Layer Design for QoS Support in Wireless Hybrid Networks ", ISSN 1845-6421, Vol.3, No.3, September 2007.

- Y. Koucheryavy, V.B. Iversen and J. Harju, Special issue of the Journal of Communications Software and Systems (JCOMSS) "Next Generation Teletraffic and Wired/Wireless Advanced Networking", ISSN 1845-6421, Vol.2, No.4, December 2006.

- T. Braun, G. Carle, S. Fahmy, Y. Koucheryavy "Wired/wireless internet communications", Computer Communications, Volume 30, Issue 7, 26 May 2007, Pages 1441-1442.

- T. Braun, G. Carle, Y. Koucheryavy and V. Tsaoussidis "Wired/wireless Internet communications", Computer Communications, Volume 29, Issues 13-14, August 2006, Pages 2599-2600.

6.5.2 Joint publications

The following joint publications have been submitted, accepted and presented during the course of the Action:

- Fernando J. Velez, Orlando Cabral, Francisco Merca, Vasos Vasiliou, "Service Characterisation for Cost Benefit Optimisation of Enhanced UMTS", submitted to Telecommunications Systems, Springer, 2007.

- Orlando Cabral, Fernando J. Velez, George Hadjipollas, Marinos Stylianou, Josephina Antoniou, Vasos Vassiliou and Andreas Pitsillides, "Enhanced UMTS Simulation-based Planning in Office Scenarios," Actas da Engenharia'2005 - Inovação e Desenvolvimento, Covilhã, Portugal, Nov. 2005.

- O. Cabral, F.J. Velez, G. Hadjipollas, M. Stylianou, J. Antoniou, V. Vassiliou and A. Pitsillides, "Optimisation of Indoor Mobile B3G Systems Based in Economic Aspects," in Proc. of IEEE SCVT' 2005 - 12th Annual Symposium on Communications and Vehicular Technology in the Benelux, Enschede, Netherlands, Nov. 2005.

- O. Cabral, F.J. Velez, G. Hadjipollas, M. Stylianou, J. Antoniou, V. Vassiliou and A. Pitsillides, "Enhanced UMTS Cost/Revenue Optimisation in Offices Scenarios," in Proc. of 3G 2005 - 6th IEE International Conference on 3G Mobile Communication Technologies, London, UK, Oct. 2005.

- Orlando Cabral, Fernando J. Velez, George Hadjipollas, Marinos Stylianou, Josephina Antoniou, Vasos Vassiliou, Andreas Pitsillides, "Enhanced UMTS Simulation-based Planning in Office Scenarios," in Proc. of EW' 2006 - 12th European Wireless Conference, Athens, Greece, Apr. 2006.

- Orlando Cabral, F.J. Velez, G. Hadjipollas, M. Stylianou, J. Antoniou, V. Vassiliou, A. Pitsillides, "Enhanced UMTS Cellular Planning for Multiple Traffic Classes in Offices Scenarios," in Proc. of PIMRC 2006-11th IEEE International Symposium on Personal, Indoor and Mobile Radio Communications, Helsinki, Finland, Sep. 2006.

- Yevgeni Koucheryavy, Giovanni Giambene, Dirk Staehle, Francisco Barcelo-Arroyo, Torsten Braun, Vasilios Siris (Eds.) "Traffic and QoS Management in Wireless Multimedia Networks", Springer US, 2009. ISBN 978-0-387-85572-1.

- I. Alocci, G. Giambene, Y. Koucheryavy, Optimization of the Transport Layer Performance in a Wireless System based on the IEEE 802.11e Standard, International Symposium on Wireless Pervasive Computing 2007 (ISWPC2007), Porto Rico (USA), February 5-7, 2007.

- G. Giambene, S. Giannetti, C. Párraga Niebla, M. Ries, A. Sali, Traffic Management in HSDPA via GEO Satellite, Space Communications journal, Vol. 21, No. 1-2, pp. 37-54, 2007/2008.

- Robin Soni, Naveen Chilamkurti, Giovanni Giambene, Sherali Zeadally "A Cross-Layer Design for H.264 Video Stream Over Wireless Local Area Networks", in Proceedings of IEEE International Symposium Computer Science and its Applications (CSA-08), Hobart, Australia, October 2008.

- D. Morales-Jiménez, J. J. Sánchez, G. Gómez, M. C. Aguayo-Torres, and J. T. Entrambasaguas, "Imperfect adaptation in next generation OFDMA cellular systems", Journal of Internet Engineering, vol. 2, no.2, 2008.

- T. M. Bohnert, Y. Koucheryavy, M. Katz, J. Jakubiak, E. Borcoci, E. Monteiro "On Evaluating a WiMAX Access Network for Isolated Research and Data Networks using NS-2", NEW2AN 2007, St.Petersburg, Russia, September 2007.

- T. M. Bohnert, D. Staehle, G.S. Kuo, Y. Koucheryavy, E. Monteiro "Speech Quality Aware Admission Control for Fixed IEEE 802.16 Wireless MAN", IEEE ICC 2008.

- N. Bayer, M.C. de Castro, A. Kassler, Y. Koucheryavy, P. Mitoraj, D. Staehle "Performance Evaluation of VoIP Wireless Mesh Networks", IEEE ICCSC 2008, Beijing, China.

- A. Kassler, D. Staehle, Y. Koucheryavy "Wireless Mesh Networks – Theory, Standards, Practice", full day tutorial at VTC Spring 2008, Singapore.

- Thomas M. Bohnert, Yevgeni Koucheryavy, Marcos Katz, Jakub Jakubiak, Eugen Borcoci, Edmundo Monteiro "On Evaluating a WiMAX Access Network for Isolated Research and Data Networks using NS-2", IEEE JCOMMS, January 2008.

- T. M. Bohnert, E. Monteiro, M. Curado, A. Fonte, Y. Koucheryavy, D. Moltchanov, M. Ries "Internet Quality of Service: A Bigger Picture", OpenNet Workshop "Service Quality and IP Network Business: Filling the Gap", March 27 - 29, 2007, Brussels / Diegem, Belgium.

- T. M. Bohnert, E. Monteiro, Y. Koucheryavy, D. Moltchanov "Non-Parametric and Self-Tuning Measurement-based Admission Control", IFIP Networking 2007, Atlanta, USA.

- T. Braun, G. Carle, S. Fahmy, Y. Koucheryavy (Eds.) "Wired/Wireless Internet Communications", WWIC 2006, Bern, Switzerland, Springer, Lecture Notes on Computer Science 3970, 2006.

- T. Braun, G. Carle, Y. Koucheryavy, V. Tsaoussidis (Eds.) "Wired/Wireless Internet Communications", WWIC 2005, Xanthi, Greece, Springer, Lecture Notes on Computer Science 3510, 2005.

- F. Boavida, E. Monteiro, S. Mascolo, Y. Koucheryavy (Eds.) "Wired/Wireless Internet Communications", 5th International Conference, WWIC 2007, Coimbra, Portugal, May 23-25, 2007, Proceedings. Springer 2007, ISBN 978-3-540-72694-4.

- Jarmo Harju, Geert J. Heijenk, Peter Langendörfer, Vassilios Siris (Eds.), "Wired/Wireless Internet Communications", 5th International Conference, WWIC 2008, LNCS 5031, ISBN 978-3-540-68805-1.

- P. Loureiro, S. Mascolo, E. Monteiro "Open Box Protocol (OBP)", Proceedings of High Performance Computation Conference, Houston, US, 26-28 Sep., 2007.

6.5.3 Relations to the established conferences

The close cooperation with several traffic and QoS-related series of conferences and workshops (IWQoS, ASMTA, NGMAST, NEW2AN, ICT and ConTEL) and the participation in these events by technical support, papers and invited talks transferred results to a wider audience and contributed to making conferences and workshops more international and visible. The following joint efforts have been performed:

- The 2008 International Symposium on Computer Science and its Applications (CSA), October 12-15, Tasmania, Australia, 2008.

- International Symposium on Wireless and Pervasive Computing, Melbourne, Australia February 11-13, 2009.

- In several other conferences (VTC, SoftCom, ConTEL, NEW2AN, ICT, etc.) and events (IEEE Broadband Wireless Access Workshop Series), sponsored or technically cosponsored by the IEEE Communications Society and/or its sister societies, three or more COST 290 members acted jointly in the conference TPC, thus creating a significant presence and promoting COST activities to a broader international community outside COST and Europe.

6.5.4 New conferences, workshops and symposia

The following events have been organized by COST 290 community:

- International Conference on Wired/Wireless Internet Communications, WWIC. Next generation mobile networks will be based on Internet core networks and wireless access networks. The need for efficient merging of the wired and wireless infrastructure as well as the new multimedia services and applications of next generation networks call for novel network architectures, protocols and traffic-related mechanisms. WWIC addressed research topics such as the design and evaluation of protocols, the dynamics of the integration, the performance tradeoffs, the need for new performance metrics, and cross-layer interactions. The goal of the conference was to present high-quality results in the field, and to provide a framework for research collaboration through focused discussions that aimed at designating future research efforts and directions. In this context, the program committee accepted only a limited number of papers that met the criteria of originality, presentation quality and topic relevance. WWIC is a single-track conference which has reached, within 5 years, the highest level of quality, which is reflected both in the level of participation as well as the acceptance ratio and the amount and quality of submitted papers. WWIC 2008 http://wwic2008.cs.tut.fi/

- IEEE Broadband Wireless Access Workshop Series, BWAWS. A steadily increasing spectrum of services is attracting a rapidly growing number of users which, in turn, wish to access these services 'anytime and anywhere'. In order to meet this demand, Broadband Wireless Access (BWA) technologies are becoming extremely important and vendors and standardization bodies respond to this development with new and powerful BWA technologies. Supporting transmission rates up to several megabits per second at distances far as tens of kilometres while providing full mobility support, these technologies provide the long-awaited means for delivering any telecommunication service over the Internet. Nevertheless, BWA technologies are still in their infancy and many are far from complete and optimized for such a versatile environment like the Internet. Consequently, BWA is currently receiving much attention by the research community. Organizing this workshop aimed at bringing together and providing an international forum for this research community. Each edition's best papers are selected and published in high-profile scientific journals (Elsevier Computer Communications, EURASIP Journal of Wireless Communications, etc) with team serving as invited guest editors. The acceptance rates ranges typically from 20-30 percent (i.e. for the last event 100+ submissions from more than 30 countries and only 27 have been accepted). A report of the workshop has been published in the most significant scientific journal by IEEE ComSoc, the IEEE Communication Magazine. In addition, the workshop attracted outstanding keynote speakers from SIEMENS, NSN, Rice University (USA), etc. The 1st BWA Workshop was co-located with NGMAST 2007, 13 September 2007, Cerdiff, Wales, UK; the 2nd IEEE BWA Workshop, co-located with IEEE CCNC 2008, 12 January 2008, Las Vegas, Nevada, USA; the 3rd IEEE BWA Workshop, co-located with IEEE ICC 2008, May 2008, Beijing, China; 4th IEEE BWA Workshop, co-located with IEEE GLOBECOM 2008, November 2008, New Orleans, USA   http://www.bwaws.org

- ERCIM Workshop on eMobility. Progress in computing and (wireless) communication technologies allow mobile users to permanently communicate with other persons or to use services and applications that might even have been designed for mobile users. Mobile Applications and services require technical solutions on various levels such as wireless network technologies, communication architectures and protocols supporting mobility of users and devices, middleware to support security and flexibility, as well as applications that are adaptive and context sensitive, although or because mobile devices have usually limited resources. The target of the workshop was to discuss issues and problems related to future applications and services based on mobile and wireless technologies. This multi-disciplinary workshop aimed at bringing together researchers, who are active in these different research areas. http://www.emobility.unibe.ch/workshops/2008-05-30/workshop.html

- A seminar on "Service Quality Evaluation in Wireless Networks" organized by IKR/University of Stuttgart (Germany) and TUWien (Austria) was held in June 2006 (Vienna) and June 2007 (Stuttgart). This seminar has been created to bring together researchers and students who have a particular interest in the evaluation of services in wireless networks. The scope of the seminar included: evaluation methodology, modeling aspects, integrated cross-layer

investigations, and solutions, which are tailored to optimize the performance of a particular service in a wireless environment. Special emphasis was given to video services, including subjective and objective performance metrics, testbeds, and cross-layer investigations http://www.ikr.uni-stuttgart.de/video2007

- Wireless4D workshop. Broadband internet access is at present available only to a small portion of the world's population, and there is a significant penetration discrepancy not only between different countries but also between different regions and areas within a given country. In addition, there is a growing interest on the local community and municipal levels to get broadband wireless access, but the number of options regarding network and service providers, as well as price and usage plans, is severely limited. However, affordable broadband for all is a key requirement to bridge the digital divide and to bring sustainable development to rural and developing regions as well as to support communities and municipalities. Today, existing technologies and plans for broadband access fail to address key challenges in terms of cost, deployment, or power consumption in order to bring broadband internet access to sparsely populated rural areas or to the masses of developing countries. While the focus of the general M4D conference was on multi-disciplinary research addressing the social, political, cultural and educational barriers to bringing ICT into developing regions, this workshop focused on the technical and economical aspects of enabling (broadband) wireless internet access for rural and developing areas, as well as supporting communities and municipalities. The goal was to bring together researchers and practitioners and to serve as a forum for presenting and discussing state of the art research, exchanging ideas and experiences, and facilitating interaction and collaboration. http://m4d.humanit.org/

- Symposium on "QoS in Wireless Multimedia Networks". The Symposium was collocated with the 14th International Conference on Software, Telecommunications and Computer Networks (*SoftCOM 200*6) and was held on September 30 – October 1, Split – Dubrovnik, Croatia. Papers have been published in the SoftCOM 2006 Proceedings (ISBN 953-6114-90-9) and in the IEEE Xplore. The challenge of new communication architectures is to offer controlled QoS. QoS aspects in NGN (Next Generation Networks) is an important topic especially in wireless networks (cellular networks, mobile networks, data transmission networks and satellites networks). Voice and video multimedia wireless applications will be developed and used when real QoS mechanisms will be available. Original results were published in all areas of wireless multimedia network design, QoS control and management, new network planning criteria, integration of heterogeneous traffic flows, delivering services to users on the move, localization services etc. http://www.fesb.hr/SoftCOM/2006/CfP_COST_06.pdf

- Mobile WiMAX – Towards Ubiquitous Internet (Final Workshop of MobileMAN, an IT/LA project), ISCTE, Lisboa, September 2007. The nowadays context of frequency spectrum management in Europe, as well as the need for making broadband access flexible for people, creates opportunities for the entrance of new operators, and the diversification of the offer of innovative access technologies. As WiMAX allows for supporting

mobile broadband Internet services in outdoor environments (and even in indoor ones, for the lowest frequency bands) with high coverage ranges and user mobility support, the theme of the Workshop appeared in a phase when the mobile communications sector would be in the centre of attention again. The workshop was featured by speakers from academia, as Prof. Hamid Aghvami from King's College London, from manufacturers, as Dr. Mika Grundstrom from Nokia, from operators and their research Laboratories, and also from research projects of Institute for Telecommunications, as Mobile MAN (Mobile IP for Broadband Wireless Metropolitan Area Networks). http://www.e-projects.ubi.pt/MobileWimaxWorkshop/MobileWimaxWorksho p.html

7. ECONOMIC DIMENSION

The estimated man-month allocation in person-year for the first year is detailed as follows:

- *Post Doctoral Fellow, Engineer, Researcher* = 0.5 person/year/country

- *Technician* = 0.5 person/year/country

- *PhD Student, Student fellowships* = 2 person/year/country

The table below describes the budget allocation for *the first operational year*:

Item	Funds received	Funds spent
Secretariat:	12,000€	12,000€
Publications:	None	None
Workshops and Seminars:	5,000€	5,000€
MC meetings:	51,200€	57,387.56€
Short-Term Scientific Missions:	3,000€	1,019.07€
Others:	None	None
TOTAL:	71,200€	75,406.63€

The table below describes the budget allocation for *the second operational year* (not yet final picture):

Item	Funds received	Funds spent

Secretariat:	24,000€	24,000€
Publications:	None	None
Workshops and Seminars:	5,000€	5,000€
MC meetings:	92,124€	64,310.64€
Short-Term Scientific Missions:	10,000€	5,658.62€
Others:	None	None
TOTAL:	111,000€	98,969.26€

The table below describes the budget allocation for *the third operational year* (not yet final picture):

Item	Funds received	Funds spent
Secretariat:	15%	14,816€
Publications:	None	None
Workshops and Seminars:	5,000€	5,000€
MC meetings:	92,124€	87,403.31€
Short-Term Scientific Missions:	10,000€	6,373.41€
Others:	None	None
TOTAL:	136,850€	113,593.23€

The table below describes the budget allocation for *the forth operational year* (not yet final picture):

Item	Funds received	Funds spent
Secretariat:	11,739€	10,708€
Publications:	None	None
Workshops and Seminars:	5,000€	5,000€
MC meetings:	58,261€	54,336.33€
Short-Term Scientific Missions:	15,000€	12,054.02€
Others:	None	None

TOTAL:	90,000€	82,098.90€

8. SELF EVALUATION

COST 290 was initiated in 2002 by a small team of researchers, at a time when multimedia services have not yet been very strongly manifested in wireless environment. Moreover, wireless networks of different scale offering broadband throughput have not been so widely deployed and easily accessed. However, the strategic agenda that COST 290 proposed back in 2002, today appears as viable and feasible reflecting an order of a day, still promising significant achievements in the future. Nevertheless, the original agenda can be easily extended further to cover new research topics of great significance. In four years, the Action became much bigger – more than 70 institutions from 25 countries involved – with quite strong involvement of the European research community.

COST turned out to be a very promising and useful platform for developing a new strategic research and forming a brand new community. Since the research within an Action is initiated with a bottom-up approach, it is quite easy to bring a brand new idea to the public for a feedback – technical meetings do not require any sort of preliminary evaluation or review like conference do, a brainstorm idea can be presented in ad hoc way. Besides that, ongoing work has been heavily presented during the technical meetings – most of the feedbacks have been appreciated by the speakers. Moreover, it appears that COST is a brilliant start for young researchers: in the course of COST 290 many undergraduate and fresh postgraduate students delivered their first public international talks – a great practise for them. Several young postgraduates joined the Action in the very beginning and have obtained their postgraduate degree during or soon after the Action has ended. Almost all research ideas and results have been presented, discussed and commented during the Action's duration.

As specified above, COST 290 has achieved a successful degree of collaboration through the use of nearly all COST instruments, e.g. joint technical meetings, STSMs and workshop support. This has been confirmed by the final report to be published in form of a book by Springer US with the title "Traffic and QoS Management in Wireless Multimedia Networks": over 70 researchers from nearly all participating countries have contributed to the book. That was a significant effort resulting in over 350 pages of up-to-date techniques and approaches to deal with the growth of data traffic in wireless mobile networks and the important need to guarantee differentiated quality of service levels to different traffic classes. The book presents the latest research achievements and results in research areas such as traffic engineering, mobility and interoperability, network architectures and planning, as well as services, regulations, and economic aspects. This book covers a pretty wide area of research on wireless communications and networking from the physical layer up to the application layer. It can be recommended for researchers and PhD students to receive a comprehensive and up-to-date overview on engineering approaches, optimization methods and open issues in wireless multimedia networks.

The success of the Action is also related to the efficient use of the STSM instrument that, in a brand new community, shows mutual penetration level. At the very beginning, the STSM activity was fairly low, while during the second part of the Action it began to be further explored. Still, compared to other Actions, the number of STSMs carried out in the frame of the Action is pretty low, but results are fair and promising.

The creation of a number of special issues, the conference, and a number of workshops and symposia shows the high dissemination of the Action's results. Most of the venues created under COST 290 umbrella (like conferences and workshops) will stay after the Action is completed.

Regarding the links to industry, WiMAX Point-to-point and Point-to-multipoint demonstrators were present at the Coimbra Management Committee Meeting, which was carried out in cooperation with Alvarion and Advanced Resources, which sponsored the meeting and the associated WEIRD Workshop and Conference (WWIC 2007).

The evaluation of the technical achievements vs. the technical research agenda specified in MoU is presented in Annex A.

However, there were a number of difficulties, weaknesses and shortcomings in the course of the Action. The most important one is that not all institutions and individuals officially enrolled and committed to the Action as MC members have participated in the actual meetings and the actual research work, while a number of active participants have not been accepted as MC members (mainly due to late joining), and to attend every single meeting (and get refunded) they had to get an approval from the MC member as official substitute. Some MC members have never shown up at the MC and technical meetings. With respect to the objectives set in MoU, the following shortcomings have to be highlighted:

-   International testbed coordination: there was a lack of coordination of the existing testbeds, therefore they have not been used by a community as widely as they ccould be. This shortcoming could be solved by the creation of a testbed SIG (Special Interest Group). Moreover, a liaison to Planetlab and Panlab was established. However, the shortcoming is not hopeless and a number of joint papers on testbed measurements have been published.

-   Contributions to standardization bodies: there is a lack of contributions to standardisation bodies. This is due to the fact is that not much of standardization-related activity has been performed in the course of the Action. Moreover, ITU liaison has been present only at the first MC meeting and has never taken part in other meetings, withouth providing a justification (see commitment problem described above).

-   Limited links to industry and service providers: there was indeed a limited participation of industry in COST 290. However, in the course of the Action nearly every participant had its own internal industrial projects (ran under NDA) therefore gaining understanding of the needs of industry. In such cases it is fairly

difficult to bring the exact details of a project to the public, but rather experience in the follow-up research projects.

9. EVALUATION

9.1 Evaluation panel and evaluation procedures

Members of the Evaluation panel:

External Evaluator: Prof. Carla-Fabiana Chiasserini
                       Dipartimento di Elettronica
                       Politecnico di Torino
                       Corso Duca degli Abruzzi, 24
                       10129 Torino, Italy
                       Tel. +39-011-564-4183
                       Fax +39-011-564-4099
                       E-mail: flavio.canavero@polito.it

DC Rapporteur: Director Ivar Jardar Aasen
                       UniK - University Graduate Center
                       University of Oslo and Norwegian University of Science and

Technology

                       Instituttveien 25, PO Box 70
                       N-2007 Kjeller, Norway
                       Tel. +47-64-84-47-00
                       Fax +47-63-81-81-46
                       E-mail: ivara@unik.no

Science Officer: Dr. Gian Mario Maggio
                       COST Office
                       Avenue Louise 149
                       1050 Brussels, Belgium
                       Tel. +32-2-533-3826
                       E-mail: gmmaggio@cost.esf.org

Evaluation procedure:
The External Evaluator, the DC-Rapporteur and the COST ICT Science Officer attended the Final MC Meeting and the Presentation of the Final Results of the COST Action 290 at the Tampere University of Technology, in Tampere, Finland on 27th and 28th of May 2008. The presentation of Dr. Yevgeni Koucheryavy, Chair of the Action, described the technical and dissemination activity of the Action, and highlighted the achieved goals. The technical presentations given by some of the COST 290 participants gave an overview of the work carried out during the Action.

9.2 Results versus objectives

The main objective of the Action was to evolve, develop and investigate new approaches, techniques, methods, models, strategies and tools for the analysis, design, control and evaluation of future advanced Multiservice Wireless Networks (MWNs).

The technical presentations given at the COST 290 meeting and the results described in the documentation show that the above goals have been attained. The average level of the scientific work carried out during the Action is highly satisfactory.

A further major goal was to encourage and coordinate research between European participating organizations and research groups active in the field. The Action was successful in meeting this target, promoting joint research work (witnessed by several papers co-authored by different institutions) and creating the WWIC (Wired/Wireless Internet Communications), a well established and attended conference.

From the Action Progress Report, the objectives of COST 290 were also: "To contribute to standardization bodies on the basis of the obtained achievements by creating inputs leading to well supported decisions" and "To pursue industry and service provider links and establish links on a wide scale. All the participants maintain contacts and contracts to industry partners; collaboration in the field is expected."

Evidence of this activity is represented by the formation of the ERCIM e-Mobility Working Group, although few information on this activity and its results has been provided.

In conclusion, a good match between the objectives and the planned activity can be certified for this Action. All aspects of the general problem stated at the beginning of the project were addressed and the results of the research are evidenced in the book that the Action is preparing.

9.3 **Outcome and achievements**
The research activity of COST 290 has been organized into four Working Groups, with the aim to properly address different aspects of multimedia wireless networks and to maximize the participation by contributors to the Action. All Working Groups produced interesting research results. The main outcomes consist in:

1. The development of algorithms, protocols and measurement methods for wireless networks, such as 3G cellular networks, mobile ad hoc networks and sensor networks;

2. The definition of quality of service metrics for multimedia services to be supported in wireless networks;

3. Traffic and network modeling techniques;

4. Analytical and simulation-based performance evaluation, as well as testbed implementations.

The attained results allow for planning and design of efficient wireless networks and for a better understanding of the quality of service that can be provided to users in the support of multimedia services.

The dissemination of results has proceeded along several effective directions, including a website (where the relevant documents of the Action are available), the publication of articles in qualified scientific and technical journals, and the preparation of a solid and complete book that summarizes the Action work and will be

published by Springer. Also, the WWIC conference created within COST 290, which will continue after the Action end date, is one of the most relevant results of this Action.

9.4 **Impact of the Action**
Providing multimedia services to mobile users, everywhere and anytime with satisfactory quality of service is an important challenge, which involves research and industrial communities. The results of the COST Action 290 are therefore of fundamental importance for the development of innovative communication systems. Theoretical results will also enhance our knowledge on networking and system behaviors, and will represent an important reference for future research. Furthermore, the Action represents an excellent example of research relations establishment between European institutions.

9.5 **European added-value**
This COST Action successfully established new relations between European institutions and created a new research community aiming at a better cooperation quality and seeking for innovative solutions in the networking field. This is one of the key goals of the COST framework. Furthermore, a collaborative approach to the problem of multimedia services support in mobile networks was adopted, leading to interesting cross-layer solutions. The difficult task of integrating the various testbeds and tools used at the single institutions participating in the Action was attempted, with good results. WWIC has become an important forum for the discussion and valorization of research works at European and international level.

Overall this Action has developed long-term fundamental work in wireless networking, which is required to support emerging technologies and multimedia services.

9.6 **Coordination and management**
The coordination and management of the Action incurred some initial difficulties; however it seems that most of them have been solved in the final phase of the Action. The Action had 24 Parties, but only representatives of 15 Parties participated in the last meeting.

9.7 **Dissemination of results**
All the different dissemination means adopted by this Action were effective. The creation of the WWIC conference and the preparation of the book that collects the most relevant contributions and that will be published by Springer deserve special mention. However, the final conference, and therefore the presentation of the final results, is equally important and have maybe been overshadowed by the co-located conference activity. Furthermore, the MC could have considered a wider presentation of the results achieved by the Action to the industrial community, in order to increase the impact of the Action.

9.8 **Strengths and weaknesses**

The strength of this Action resides in the coordinated effort among about twenty five countries in Europe, demonstrating a significant scientific cooperation. The creation of a research community in multiservice communication networks and the establishment of a well-attended conference as WWIC are the main outputs of this Action, along with some interesting technical results.

A weakness concerns the relations with the industrial community and the limited impact on standardization bodies. Although it may be difficult to attract industry's and operators' attention on some theoretical results, a larger spreading of the Action results could have been carried out in the industrial area.

9.9 **Recommendations**
The rapid evolving of telecommunication technologies and services claims for effective planning, design and performance evaluation methodologies and tools. To meet such requirement, fundamental research is of primary importance. COST 290 has been successful in producing theoretical results for the development of multiservice mobile networks, and in creating a research community in this area. These research relations and collaborations should strengthen, possibly through a new COST Action or using other European frameworks. However, if a follow-up activity will take place, a larger spreading of the research results to industrial community is recommended, for instance by organizing industrial workshops that serve as forum for discussion between companies and academia members.

10. **DC REMARKS**

The COST 290 Action successfully created a leading community for fundamental research in the area of multiservice wireless networks. It developed innovative solutions for network and traffic modelling, planning as well algorithms and protocols design. The book that will be published by Springer will represent an important point of reference for the scientific community.

Annex A: Evaluation of technical achievements against the technical research agenda specified in MoU

Despite the intense research and standardization tasks performed during the last years, there are still many issues to be solved before advanced multiservice wireless mobile networks can be deployed on a large scale. These networks are expected to provide a wide range of applications (many of them are still unknown) with different traffic characteristics (bit rate, burstiness) and QoS requirements (e.g., end-to-end delay, jitter, packet losses). Moreover, QoS parameters such as network reliability and service availability become even more important. The solution to these problems is not simple, especially when trying to meet other desirable goals such as the efficient resource usage, seamless transition between access technologies and standards, the interworking among fixed or wireless networks both terrestrial and satellite based, the migration to 'all IP' network architectures, and the support of, and with time comprehensive transition to, IPv6 technologies. Further down the R&D road the transition of the 'always on' concept to the 'always best connected' concept has to be ad-dressed with its massive implications for the development of terminal and network reconfigurability capacities, application and service adaptability, and associated standards.

The scarcity and high cost of radio spectrum necessitate that network providers maximize the profit/Hz ratio. The specific constraints in relation to coverage and capacity are becoming better known than in earlier networks. With the growth of the predominance of data traffic in wireless mobile networks and with the resultant high and less predictable fluctuation of bit-rates in both radio access and core networks, new research into adaptive approaches is still needed in both cases.

All these aspects were addressed by COST 290 and correspondent feasible achievements and results are presented in this report. However, some tasks are open and still need to be investigated, so that the need of performing further deep R&D works in this area is obvious.

The scientific objectives set in the very beginning of COST 290 can be summarized into four broad areas that encompass different interrelated aspects of multiservice wireless mobile networks. In particular, important research tasks that were addressed during the course of the Action are: the analysis of the impact of multi-class traffics on network design and dimensioning; the definition of techniques to provide adequate QoS differentiation among traffic classes; the identification of new network planning criteria to cope with the integration of heterogeneous traffic flows; the definition of new services able to provide the requested multimedia contents to users on the move. A detailed description of these research areas is provided below.

A.1 Traffic Engineering Issues

Traffic engineering encompasses the application of scientific principles and technology to the measurement, modelling, characterization, and control of multimedia multi-class traffic and the application of such knowledge and techniques in order to achieve specific performance objectives, including the planning of network capacity under QoS guarantee, and the efficient, reliable transfer of information.

The need to allocate and balance resources among different traffic classes to accomplish the best use of network resources is a crucial traffic engineering problem. As a matter of fact, traffic engineering and QoS issues need to be jointly considered. The major objective of traffic engineering is to improve network performance while maintaining the QoS requirements through the optimization of network resources, with the main focus of the optimization being the minimization of the over-utilization of capacity in certain parts of the network while other capacity is available or underutilized in the same network. The optimization objective depends on the specific goal of network operators, which may include minimizing congestion, minimizing packet loss/delay, or minimizing the blocking probability. Network management and control can be considered a very complex task, and, thus, will require robust, possibly intelligent, control methodologies to obtain satisfactory (if feasible, optimal) performance. The development of efficient and effective management and control techniques may include issues regarding resource management, congestion control, connection admission control, and active queue management.

During COST 290, advanced measurement and monitoring technologies were applied with special focus on mobile services, QoS enabled and context-dependent character of mobile applications, users' behaviour, handover methods and QoS provision techniques due to integration of heterogeneous wireless networks, innovative resource management algorithms and optimization studies.

The next point of the research agenda of COST 290 is that traffic patterns generated by IP multimedia services are quite different from traditional Poisson models used for circuit-switched voice traffic. As a result, the network parameters can be underestimated if inadequate traffic models and analytical approaches are adopted. Therefore, within the traffic engineering problems of multiservice wireless networks, a particular problem is that of the performance analysis of network elements taking into account the self-similar nature of multiservice traffic. Hence, it is necessary to derive, for instance, upper and lower bounds of a service provision rate of 3G and beyond-3G systems. Among the latter one could already count wireless LANs and mobile ad-hoc network clouds as access networks; hence, relevant considerations for traffic engineering should already be extending to include Wireless Local Area Networks (WLANs) and Mobile Ad-hoc NETworks (MANETs).

Analytical and simulation models developed within the COST 290 Action can be used as instrumental for the definition of correct techniques for the design and planning of multi-service wireless IP networks with QoS guarantees.

A.2 QoS Provisioning for Multimedia Traffic in Wireless Environment

The provision of QoS guarantees is a pressing need in wired and wireless networks as well as in distributed computing systems, particularly to support multimedia-enabled applications. Throughput, timeliness, reliability, and perceived quality are the foundations of what is known as QoS. The combination of QoS and wireless environment is one of the hot topics in the telecommunications since a few years.

The research community is now directing its interest towards unified ways of looking at system design, optimization, and QoS issues to satisfy the requirements of next-generation mobile and wireless IP networks. The implementation of all IP mobile networks implies that IP QoS architectures and mechanisms need to be developed, since the existing best-effort based mechanisms are unable to cope with the application requirements.

During the course of the Action, 3G systems experienced significant take-up in Europe on the basis of new network infrastructures, new user terminals and novel applications. To provide a research basis for the definition of 4G systems, much work still has to be done. In particular, the QoS provision for each service and the identification of suitable schemes to guarantee high capacity was of particular concern in this Action – some techniques were identified to guarantee high capacity of simultaneous users and the fulfilment of QoS levels for the different traffic classes.

QoS provisioning in wireless environment involves mechanisms, algorithms and schemes at various layers of the OSI Reference Model; in particular, physical layer, Medium Access Control (MAC) layer, IP layer and transport layer. The basic idea defined for this Action back to 2002 was that QoS support requires the joint collaboration among all these layers – therefore, cross-layer approaches, frameworks and protocols were investigated throughout the whole duration of the Action.

The Action also addressed the following important issues: statistical traffic models for multiservice wireless networks, mobility and location awareness, dynamic resource allocation mechanisms and adaptive MAC protocols depending on traffic load and channel propagation conditions and based on QoS requirements, mobile Virtual Private Networks (VPN), security, handover techniques, etc.

A.3 Network Planning and Dimensioning

The traditional task of network planning and dimensioning with QoS support is a multi-step process that involves the identification of the following aspects: (i) identification of network node location; (ii) definition of the link topology; (iii) definition of a routing strategy accounting for external input traffics; (iv) capacity allocation to the links so that suitable QoS metrics (end-to-end delay, jitter and loss ratio) are fulfilled. Many of these steps are interrelated; for instance, capacity allocation to links depends on traffic loads on the links and then on traffic routing. However, also traffic routing can be adapted to account for traffic bottlenecks, which result from capacity shortage on some links. As it is evident from these examples, network planning is a quite complex optimization process.

Traditional multiservice networks were developed within the con-trolled environment of large telecom operators. A significant knowledge is available from the design of Asynchronous Transfer Mode (ATM) multiservice backbone networks with QoS guarantees. Network planning and dimensioning problems for such kind of networks (where bandwidth avail-ability may not be always a problem, as in the case of multiservice wireless networks) are almost solved and represented a valuable knowledge basis for the work of COST 290 Action.

Nowadays it is clear the importance of multiservice wireless networks adopting "all IP" approaches to integrate different traffics and then different related applications and services. "All IP" brings different challenges and requires different solutions to the network planning and dimensioning problems. For IP-based packet-switched networks a number of QoS-assurance techniques were proposed. But, providing QoS guarantees in IP networks is a difficult task, because the communication paradigm adopted by Internet was not originally conceived for a multi-service QoS context, and in particular for services that would find a more suitable "home" in circuit-switched or at least network-layer connection-oriented network infrastructures. Multiservice networks greatly require strategic planning for network growth for today and tomorrow. The techniques for design and planning of multiservice IP networks are not yet settled, for a number of reasons, such as, for instance:

- The diversity of applications and traffic flows.
- The variety of proposals that were submitted for the integrated management of traffic flows with different QoS requirements (architectures, protocols).
- The difficulty in the characterization of traffic sources in probabilistic terms.
- The uncertainty about the QoS metrics to be adopted for planning purposes.

Multimedia wireless network integration into all-IPv6 networking environment, considering intra- and inter-domain issues of capacity planning and optimization for mobile multimedia services.

Then, an important issue that was addressed in the research agenda is the identification of suitable design rules and planning guidelines for ad-hoc wireless systems in order to achieve important features, such as: connectivity, re-configurability, security and support of integrated traffics. In this context, planning does not exist due to the spontaneous and dynamic nature while centralized dimensioning is also not feasible due to potential topology volatility. Distributed approaches to dimensioning for QoS were investigated as well.

A.4 Service Aspects

The need of multiservice wireless networks is basically largely dependent on the pervasive universal growth of the use of existing and new, narrowband to broadband, applications and services and their diffusion out to mobile users. It is clear that many of the new applications will be band-width-intensive to provide the users with multimedia contents, high degree of interactivity and real-time traffics, as those achievable from current high-speed wireline access systems (e.g., Asynchronous Digital Subscriber Line, ADSL, access).

The implementation of new multimedia services poses new problems related to service billing, user privacy, user profiling, middleware architecture introduction for service and QoS adaptability (depending on user preferences, access characteristics, history of interaction), security, transactional interactivity, network reconfigurability, interoperability and inter-working of networks (intra-terrestrial, intra-satellite, inter terrestrial and satellite), network engineering, traffic engineering and so on. Each service has specific requirements that influence both the overall network design and

the detailed information carried within protocols. Therefore, for a proper design of both networks and protocols, it is necessary to understand the services to be supported. The real-time aspects of the service can be described in terms of the transport level (such as transmission delay or packet jitter) and the session level (such as time to establish the session). This Action focused on these service aspects by increasing the knowledge on new mobile applications and by providing adequate analysis on service provision aspects (i.e., enabling technologies and available design approaches) and characteristics. One important issue addressed by this Action was the relationship between service and pricing policy. Back in 2002, this was a novel field of research activity with a significant relevance for future mobile communication systems. It is motivated by the deployment of new services and hence new traffic types to be managed by the system, particularly in the context of the sophisticated evolution of mobile wireless networks beyond 3G and encompassing the evolution of all forms of mo-bile wireless networks. Such aspects are of vital importance, because a right charging policy entails revenue and the possibility to enrich the ser-vice offer, thus allowing a positive feedback on the network deployment and traffic itself.

A.5 Organization of the Research Agenda

In order to fulfil the research agenda mentioned above, the research activity of the COST 290 has been divided into four Working Groups (WGs). Such a breakdown structure has been selected to increase the efficiency of the research work, by splitting activities into smaller sub-activities whose outputs can be exchanged at the project level during joint WG meetings. There is no overlap among research areas of WGs; some shared topics are addressed from different perspectives.

Working Group 1: "Traffic Engineering" chaired by Prof. Dirk Staehle (University of Würzburg, Germany). This WG dealt with the following topics:

- Traffic characterization and modelling
- Mapping of QoS classes and SLA/SLS
- Resource management and QoS provision
- Congestion control
- Cross-layer design
- Transport protocols over wireless
- Medium Access Control (MAC)
- Performance evaluation

WG1 had a very significant number of contributions. It addressed Radio Resource Management (RRM) algorithms, in particular scheduling, queuing and Connection Admission Control (CAC) in wireless systems such as WCDMA, TDMA/TDD, HSDPA, WiFi, WiMAX and GEO. It explored implications of wireless MAC to the higher layers performance mainly through TCP evaluation in the presence of the time-varying wireless medium including analysis of congestion control unfairness when several nodes contend for resources. Significant attention was given to cross-layer design issues. The development of cross-layer performance optimization was addressed as well as more practical issues, in particular, some results on real-time applications like VoIP and video, using cross-layer cooperation over current wireless technologies. Also the studies on performance evaluation and traffic modelling of existing and near-future technologies mainly of wireless nature is done, it also

includes analysis of traffic impact on HSDPA systems. Performance evaluation by protocol simulators and measurements were analysed: i) the SEACORN simulator developed captures the dynamics of the end-to-end behaviour within an entire UMTS network including the support of enhanced functionalities; ii) the HSDPA/UMTS macrocell testbed presented allows to capture real performance of the system; analysis of impact of TCP parameters in the results of FTP experiments are presented. Moreover, this WG dealt with QoS and its assessment using user-perceived approaches. This WG also received contributions from the description of WiMAX testbed deployed in Portugal and from the discussion on coverage planning issues.

Working Group 2: "Mobility and Interoperability" chaired by Prof. Francisco Barcelo (Technical University of Catalonia, Spain). This WG dealt with the following topics:

- Mobility characterization
- Location awareness
- Handover techniques
- IP mobility protocols
- Interworking between different access technologies
- QoS and mobility (signalling, routing, etc.)
- Privacy and security

This WG addressed extensive analysis of mobility, by presenting the most important achievements in the area of mobility modelling. It presented the Quality of Service for the Mobile Multiuser Multimedia (Q3M) project developed together by University of Coimbra (Portugal) and DoCoMo Labs (Germany) aiming at the support of seamless multimedia, multi-user communications with QoS support in the "all IP" scenario. The Q3M architecture has been supported by SEMUD (Seamless Mobility of Users for Media Distribution Service) and MUSC (Multi-user Session Control) mechanisms allowing seamless mobility to multi-user sessions based on the combination of caches located at access routers, buffers located in mobile nodes and a session context transfer mechanism, and processing of the setup of multimedia sessions with end-to-end QoS mapping, QoS adaptation and connectivity control. This contributied also to a novel service component called Mobility and Quality (MnQ) enabler that resides in the application-plane of the IMS operator network and uses SIP, the signalling protocol specified for IMS by 3GPP. The topic of QoS in PCS (Personal Communications Ser-vices) was well researched. In particular, attention was paid to resource management and QoS control in emergency situations with special bias to resource reservation and call admission control analysing combined pre-emption and queuing schemes using separate queues for emergency new calls and public handover calls. This WG finally addressed IP mobility protocols in wireless networks: mobility in VC-based networks is analysed and IPv4/IPv6 based multicast protocols.

Working Group 3: "Network Architecture and Planning" chaired by Prof. Torsten Braun (University of Bern, Switzerland). This WG dealt with the following topics:

- Network planning
- Capacity dimensioning
- Evolution of network architecture
- Self organization

- Service architectures

The main focus of the WG was on wireless multi-hop networks, because those networks evolved significantly during the last 5 years and several relevant application scenarios such as wireless mesh networks, vehicular networks, and sensor networks evolved too. Those networks have high requirements on self-management and self-organizing mechanisms are required for robust and reliable network operation. The WG contained contributions on the topic of performance modelling and analysis of a relay node in IEEE 802.11 multi-hop wireless networks; an extensive analysis on routing protocols for multi-hop wireless networks; performance comparison of implementations of unicast, multicast and broadcast protocols. Further, transport layer protocols for multi-hop wireless networks were extensively analysed, in particular, a comprehensive performance comparison of different TCP flavours was presented and the design of novel mechanisms for transport layer was addressed in detail. Practical issues of management and channel assignment in wireless mesh networks were discussed based on the experimental multi-radio mesh net-work of the city of Heraklion, Crete, Greece. It also contained contributions on new mechanisms to support efficient service discovery in mobile ad-hoc networks.

Working Group 4: "Services, Regulations, and Economic Aspects" chaired by Prof. Vasilios Siris (ICS-FORTH, Greece). This WG dealt with the following topics:

- Economics and regulation
- New techno-business models, novel pricing and billing mechanisms
- Self-regulated wireless use
- Optimization based in cost/revenues aspects
- Charging and accounting
- Applications requirements and scenarios

This WG addressed economic analysis of services and deployment scenarios; it especially considered WiFi services, enhanced UMTS services, mobile grid services and broadband wireless access under the common task of identifying requirements of a uniform framework and architecture to provide multiple services. Also, business models, Authentication, Authorization and Accounting (AAA), charging and billing were considered in detail as well as newly developed models and algorithms; in particular, the Consumer-centric Business Model (CBM), an alternative to the traditional Subscriber-centric Business Model (SBM), developed by the University of Limerick (Ireland) is considered. The WG contained the contributions on investigation on optimization of mobile and wireless networks based on user/applications requirements and cost/revenues aspects.

A.6 Conclusions

Following COST 290 MoU, the main objective of this Action was to evolve, develop and investigate new approaches, techniques, methods, models, strategies and tools for the analysis, design, control and evaluation of future advanced multiservice wireless networks supporting user mobility, multimedia applications, and internetworking. Special attention was given to QoS and related aspects in both wireline and wireless

access networks, and core networks in the presence of mixed multimedia traffic. To accomplish these tasks new analytical tools, software implementations, prototypes and testbeds were invented and created.

Annex B: Details on STSMs

STSM 001(05) details

Title: Cost and revenue optimization for enhanced UMTS.
Name of visitor: Orlando Cabal, University of Beira Interior, Portugal.
Host: Andreas Pitsillides, University of Cyprus, Cyprus.
Duration: April 3-10, 2005.

Short description:
The STSM aimed to establish the framework to use ns2 simulator for Enhanced UMTS (E-UMTS), developed by University of Cyprus within IST-SEACORN (Simulation of Enhanced UMTS Access and Core Networks), to obtain results in terms of: cell coverage versus blocking probability, cell throughput as a function of the cell density, etc. From these results it is possible to obtain a cost/revenue optimization for panning an E-UMTS cellular coverage. Based on the achieved results four collaborative papers have been submitted to international conferences.

STSM 002(06) details

Title: Optimization of the Transport Layer Performance in a Wireless System based on the IEEE 802.11e Standard.
Name of visitor: Ivano Alocci, University of Siena, Italy.
Host: Yevgeni Koucheryavy, Tampere University of Technology, Finland.
Duration: April 15 – May 15, 2006.

Short description:
The area of interest for the STSM is in evaluating of the TCP performance as a result of interactions with lower layer protocols of the IEEE 802.11e technology and, in particular, radio channel conditions and transmission characteristics. Two basic types of user applications were accounted: real-time datagram applications, with various quality of service constraints, and TCP-based applications, whose main performance indicator is the connection goodput. Study was aimed at analyzing the performance of these applications on a wireless scenario. In particular, TCP-based traffic (several TCP versions will be considered, such as: TCP NewReno, SACK, and Westwood+) and UDP-based traffic will be considered. Different traffic types (e.g., VoIP, video, best effort and background) will be examined in the presence of a wireless network with IEEE 802.11e MAC layer. Tests were carried out in the ns2 environment by adopting the IEEE 802.11e implementation developed by the Technical University of Berlin, Germany. As a result, a clear picture on possible interaction and control information exchange between transport and data link layers was obtained. An optimal criterion for the selection among transmission modes on the basis of the goodput performance at the TCP level was investigated. This study was aimed to contribute to the proposal of a cross-layering framework.

STSM 003(06) details

Title: TCP NewReno Modeling and Design of Scaleable Multicast Feedback Mechanism.
Name of visitor: Roman Dunaytsev, Tampere University of Technology, Finland.

Host: Konstantin Avrachenkov, INRIA Sophia Antipolis, France.
Duration: May 02 - 31, 2006.

Short description:
TCP-Friendly Rate Control (TFRC) is the most promising protocol among proposed alternatives. TFRC is an equation-based congestion control protocol, which maintains a similar transmission rate as TCP in the steady state, but avoids abrupt changes in the transmission rate and thus has a much lower variation of throughput and delay over time compared with TCP. Such property makes it more suitable for real-time applications such as streaming multimedia where a relatively smooth transmission rate is of importance. The sender computes the transmission rate as a function of loss probability and average round trip time using the TCP throughput equation based on the model proposed by Padhye *et al.* (widely known as the PFTK-model in correspondence with the initials of the authors) and the receiver feedback packets. The PFTK-model describes steady-state throughput of a long-lived TCP Reno bulk transfer as a function of loss rate, average round trip time and receiver window size.
At the same time the PFTK-model and TFRC protocol have several drawbacks: i) the PFTK-model defines TCP Reno transmission rate, while recent measurements show that the most widely used TCP implementation in today's Internet is TCP NewReno and the deployment of TCP NewReno has increased significantly in the last few years; ii) TFRC is a congestion control mechanism designed for one-to-one communication (unicast), while the applications for which equation-based congestion control is a suitable rate control mechanism are often designed for one-to-many communication (multicast). Thus, the following detailed topics will be addressed in this STSM: i) TCP NewReno throughput modeling (including different TCP NewReno variants) for the subsequent use in TFRC protocol; ii) validation of the obtained model against simulations, existing analytical models and controlled measurements; iii) design of scalable multicast feedback mechanism; iv) simulations and experimental studies.

STSM 004(06) details

Title: Internet Tomography Measurement System (ITMS).
Name of visitor: Ivan Ganchev, University of Limerick, Ireland.
Host: Gennady Yanovsky, St.Petersburg State University of Telecommunications, Russia.
Duration: June 22 - 30, 2006.

Short description:
This STSM seeks to lay down foundations for setting up a non-invasive Internet Tomography Measurement System (ITMS) with the goal of delivering short-term and long-term (even continuous), comprehensive QoS assessment/measurements of IP performance in the core, across the edge and even extending into customer sites without impacting negatively on normal user traffic or violating security and privacy concerns in the process. The aim is to use this system to map the Internet performance profile spatially and temporally over paths between probing stations. With enough probing stations a general Internet performance tomographic picture can be constructed, and the picture along certain geographic routes as a function of time, day, month etc. may be measured. The ITMS will be designed to monitor what the end-user QoS experience is at different locations in order to construct a comprehensive

network statistical performance picture relevant to the interested parties. The system will be characterised by a constellation of automated probing stations (positioned in the networks of participating sites/partners) generating and receiving test traffic (a pre-defined pattern of test messages) over the Internet. These are strategically located/positioned in relation to the Internet areas being assessed and would include both wired and wireless networks sections. The probing stations pose no security breach to the corporate information systems as it will be installed on the outer side of the firewall of the participating sites' LANs.

STSM 005(06) and 006(06) details

Title: A Nonparametric Approach for Measurement Based Admission Control.
Name of visitor: Thomas M. Bohnert, University of Coimbra, Portugal.
Host: Yevgeni Koucheryavy, Tampere Univ. of Technology, Finland.
Duration: September 01 – October 30, November 01 – December 31, 2006.

Short description:
Quality of Service (QoS) provisioning in future Internet architectures is crucial; there exists a broad consensus about. Still a controversial subject, however, is how to provide it. Providing QoS essentially means explicit resource reservation or assignment. Technological projection of resource availability across current demand favors overprovisioning as the universal solution; it is simple and in certain aspects proven successful in the current Internet configuration. However, resources are an extremely expensive commodity such that overprovisioning, i.e. non-optimal utilization, leads to lost revenue. Therefore, but not only, operators ask for explicit on-demand resource assignment for optimal utilization and revenue. In turn, if resource availability is limited, explicit management thereof is required; in a network context meaning a need for Admission Control (AC). Briefly, the issue of AC is to decide explicitly for admission of resource consumers on a network segment dependent on actual resource availability, i.e. network state.

STSM 007(07) details

Title: TCP performance and fairness evaluation over future WiMAX networks.
Name of visitor: Konstantin Avrachenkov, INRIA, France.
Host: Yevgeni Koucheryavy, Tampere Univ. of Technology, Finland.
Duration: March 05 – 11, 2007.

Short description:
TCP is a dominant protocol governing the data delivery over the Internet. Most Internet applications, such as WWW, e-mail, FTP, and peer-to-peer file sharing, use TCP to provide reliable data transfer over unreliable "best-effort" service of IP. Recent measurements show that more than a half of today's Internet traffic is carried by TCP and it is expected that in the nearest future TCP will continue to be the prevalent transport layer protocol on the Internet. Up to date the Internet and wireless communications have been evolving as separate technologies because of different types of traffic they were intended for. Nowadays, with recent advances in wireless technologies and commercial deployment of public broadband wireless networks the convergence of the Internet and wireless communication systems is getting clear. IEEE 802.16 WirelessMAN (commercially known as WiMAX), cutting-edge

broadband access technology has capacity to address broad geographic areas without the costly infrastructure development required in deploying cable links to individual sites, the technology may prove less expensive to deploy and may lead to more ubiquitous broadband access. In addition to broadband wireless access to the Internet, WiMAX is expected to provide a wide variety of mechanisms for QoS support and provision, for example bandwidth allocation mechanisms. However, the current standard leaves some crucial mechanisms like flow scheduling unspecified, so that vendors may differentiate their implementations. WiMAX QoS issues become very important and challenging specifically in the context of undefined peculiarities of the standard. Planning and optimization of the WiMAX systems are no doubt should be investigated.

STSM 008(07) details

Title: Designing and implementing a scalable multicast Ad Hoc protocol.
Name of visitor: Firas Al Balas, University of Glamorgan, UK.
Host: Benslimane Abderrahim, University of Avignon, France.
Duration: June 26 – July 21, 2007.

Short description:
The main purpose for the STSM is to develop a scalable ad hoc protocol depending on SREM (Scalable Recursive Explicit Multicast) protocol that is scalable routing protocol which used for traditional wireless networks, our work aimed to upgrade this protocol to be one of the MANET protocols and be used at Ad Hoc environment. The development of the protocol is to decide the main key points and features to do develop this protocol and the implementation aspects under the well-known simulator ns2. The work carried out during the STSM can divided into two main parts, first part is designing (upgrading) SREM protocol to be an ad hoc routing protocol, second part is discuss the main points to be considered in implementing the new developed protocol and start the implementation using the ns-2 simulator. The first part of the of the STSM is concerned on the procedure that should be done to upgrade SREM to be an Ad Hoc protocol, where SREM is a novel protocol that address the scalable problem and the high join/leave problem by using the a dynamic branching node-based multicast tree (DBT) to deliver packets. SREM uses a set of messages and create and update a set of tables to create a dynamic branching node-based multicast tree (DBT), this algorithm is developed to support scalable multicast routing for fixed networks, in our first part of STSM the main concern is to make this algorithm used when the nodes at the network are moving i.e. Ad Hoc.

STSM 009(07) details

Title: Development and evaluation of simulation framework for implementation of real-time services in IEEE 802.16e networks.
Name of visitor: Yevgeni Koucheryavy, Tampere Univ. of Technology, Finland.
Host: Giovanni Giambene, University of Siena, Italy.
Duration: July 01 – 13, 2007.

Short description:
IEEE 802.16 WirelessMAN is the broadband access technology for the first/last mile. Supporting transmission rates up to 134 Mbps at distances far as 20 km, while

supporting mobility still at 100 km/h, 802.16 provides the broadband wireless access not only for impervious areas, but also for highly dense areas, like city centers where cabling is simply too expensive. PMP mode is featured by different transmission strategies for uplink and downlink. For both directions data transmission takes place in separate time frames, but in uplink SS transmits in *Time Division Multiplexing* (TDM) mode, while in downlink BS broadcasts a sub-frame consisting out of a burst of MAC PDUs. SS is able to adapt own transmission capabilities in accordance to the current state of PHY layer. Based on measurements at PHY layer, an SS adapts so-called *Interval Usage Code* (IUC), which includes modulation, rate, FEC scheme; uplink and downlink use different IUCs, *Uplink IUC* (UIUC) and *Downlink IUC* (DIUC) correspondingly. The MAC protocol defined by 802.16 is connection-oriented, both transport and control flows use unidirectional logical connections. The outbound MAC associates packets into a *Service Flow* (SF) to be delivered over the logical connection; every SF is associated with QoS parameters, e.g., transmission ordering and scheduling. SFs can map to DiffServ or MPLS flow labels that enable end-to-end IP-based QoS. Further 802.16 QoS facilities include four different QoS categories in the uplink and downlink; ARQ, admission control and scheduling; adaptive PHY layer is also a very important feature making MAC capable of better QoS achievement. Some algorithms, like scheduling, are intentionally left out as open issues for developers. WiMAX Forum, industry-driven 802.16 certification body assuring multi-vendor interoperability, addresses end-to-end QoS assurance for NGN framework defining All-IP mobile WiMAX end-to-end network architecture; using this architecture 802.16 networks will become integrated with existing networks such as 3G, meaning NGN services will be implemented in a smooth way.

STSM 010(07) details

Title: Development of a User-Perceived VoIP Quality aware Scheduler for OFDMA Networks.
Name of visitor: Dirk Staehle, University of Wuerzburg, Germany.
Host: Yevgeni Koucheryavy, Tampere Univ. of Technology, Finland.
Duration: September 15 – 30, 2007.

Short description:
Orthogonal Frequency Division Multiple Access is the currently most evolved radio technology used in mobile WiMAX and the future version of UMTS called UTRAN Long Term Evolution (LTE). OFDMA separates a rather broad frequency bands into orthogonal subcarriers. Transmissions can occur in parallel on different, non overlapping subsets of the subcarriers without interfering with each other. The symbols transmitted on different subcarriers experience different fading conditions if the channel is frequency selective. The different fading conditions per subcarrier lead to different bit error rates (BER) for the bits transmitted simultaneously on different subcarriers. This effect may either be countered by distributing the subcarriers belonging to the subset of a single user over the whole range of subcarriers or it may be used by allocating adjacent subcarriers to a user that currently experience good fading conditions. The first possibility means that we utilize the frequency diversity; the second possibility is called frequency selective scheduling. In the IEEE802.16e standard that builds that basis for mobile WiMAX, both variants to allocate subcarriers to users are specified. FUSC (full usage of subcarriers) and

PUSC (partial usage of subcarriers) are the default ways to allocate subcarriers. Both rely on frequency diversity, but FUSC uses all subcarriers to the users of a sector whereas PUSC only allocates a part of the subcarriers in order to allow sectorization with non overlapping subcarriers in adjacent sector. Band AMC is an optional subcarrier allocation strategy that allows frequency selective scheduling. In general, modern packet radio networks utilize adaptive modulation and coding (AMC) and also opportunistic scheduling, i.e. the current channel state is considered in the scheduling decision. The IEEE 802.16 standard foresees connections well defined QoS parameters for the transport of data packets. Admission control and scheduler have to ensure that the QoS parameters are maintained. QoS parameters of a VoIP called are typically set in a way that when they are maintained the VoIP quality is very good. However, we can not necessarily conclude that the VoIP quality is bad when the scheduler is temporarily not able to meet the QoS parameter. In order to understand the difference, let's have a closer look into the definition of VoIP quality. In fact, most works define VoIP QoS as a simple delay and loss probability. While these are the established metrics in the context of the IETF and IEEE by today, awareness of their serious shortcomings is strengthening. For an brief illustration, one simply has to imagine an equal frame loss rate but with packet loss events differently distributed over two equal calls. Clearly, the quality perceived differs as bursty loss leads to a stronger degradation than the opposite. In fact, the correct definition of VoIP quality is rather that of speech quality but as this is a complex matter most of the works on resource control do ignore this matter fact. Putting things together, a fully cross layered scheduler design, i.e. from physical to application layer, requires to estimate in overload situation the actual QoE of a VoIP connection which allows it to drop or delay packets with no or only small VoIP quality degradation. Such a scheduler shall be able to deal well with temporary overload situations allows establishing a more risky admission control leading to higher system utilization while at the same time assuring speech quality, the ultimate rating by users. The aim of the STSM is to develop the foundation of a user perceived quality aware scheduler and admission control at the example of VoIP connections in a mobile WiMAX environment. AMC and opportunistic scheduling considering both frequency and time domain make the development of both scheduler and admission control quite challenging. The outcome of the STSM shall be a simulation environment for the scheduler and admission control in Matlab and at least one paper and one COST290 temporary document presenting first results.

STSM 011(07) details

Title: Source Based Quality of Service Routing Using Complex Decision Making.
Name of visitor: Albara Awajan, University of Glamorgan, UK.
Host: Jean-Frédéric Wagen, College of Engineering and Architecture of Fribourg, Switzerland.
Duration: June 4 – 29, 2007.

Short description:
A large variety of applications have been deployed over the internet, including multimedia and real time services. In order to deliver these kinds of services to the end user while achieving the highest quality, the path that the data is transmitted on should meet the minimum/maximum requirements of the application. These requirements are called metrics/constraints in terms of Quality of Service (QoS). In

our study we propose a universal QoS routing algorithm which aims to find the best path between source and destination according to multi metrics stored in QoS profiles, each profile contains a number of constraints that assure the delivery of the service. When considering multiple constraints, it becomes harder and more complex to find the best path. For this reason our study intends to find and implement a new technique to solve this problem. Currently, a source based multi metric QoS routing algorithm has been developed, this algorithm uses the Analytical Hierarchy Process (AHP) to find the best path for service transmitting. the aim of the STSM is to develop another based multi metric QoS routing algorithm that uses Multi Attribute Utility Theory to find the best path; having another algorithm which that uses a similar routing algorithm will allow to compare the two algorithms and analyse how decision making methods can break down the complexity of multi metric routing.

STSM 012(08) details

Title: Domain-wide Session-level QoS negotiation and optimization for Advanced Multimedia Services.
Name of visitor: Agata Brajdic, University of Zagreb, Croatia.
Host: Andreas Kassler, Karlstad University, Sweden.
Duration: March 17 – May 16, 2008.

Short description:
As future multimedia services are expected to involve media-rich applications customized to meet user preferences and capabilities, the networks must deal with complex and dynamically changing QoS requirements. The goal of quality of service (QoS) negotiation for IP multimedia sessions is to determine "the best" service configuration and network resources allocation that would maximize user perceived service quality while taking into account user preferences, terminal capabilities, multimedia application requirements, as well as network constraints. Implementing this functionality uses end-to-end (E2E) application-level QoS negotiation and signaling via control layer network entities. This problem is further addressed in the context of IP Multimedia Subsystem (IMS), which has been adopted as a standardized next generation network architecture. While existing 3GPP specifications describe procedures for QoS negotiation and signaling for multimedia applications such as audio/video communication and multimedia messaging, the support for more advanced services, involving interactive applications with diverse and interdependent media components is not addressed specifically and presents an open area of research. A proposed solution for advanced QoS negotiation is based on introducing a new SIP Application Server (AS) within the IMS domain, to provide advanced QoS parameter matching and optimization (QMO) functionality within the QoS negotiation process. A QMO AS has been modelled as an entity within the service provider domain (e.g., owned by an IMS operator), which serves users who may be located in different access networks and who access services offered by third party service providers. The role of the QMO AS is to calculate an optimal service degradation path for a particular user session, attempting to maximize user perceived service quality while taking into account user preferences, terminal capabilities, multimedia application requirements, as well as network constraints. This degradation path is further passed to a network level Resource Manager located in the user's access network. The Resource Manager can then run low-level resource allocation algorithms to determine how much resources to allocate to a particular session (taking into account a session's

degradation path, achievable quality, user status, resource availability, etc.). The degradation path is thus used to efficiently adapt service quality both at initial session establishment and in response to dynamic changes in resource availability occurring during the course of a session lifetime. The area of interest for this STSM will be in extending the role of the QMO AS as the high-level (session level) coordinator for active sessions requesting advanced QoS negotiation within a whole domain, typically controlled by a network operator. While particular decisions are still made by other access network Resource Managers, the QMO AS would have a global view on what sessions with what user perceivable QoS preferences and degradation paths are currently being served in a given domain, has knowledge about the individual users contract with the given provider and what services with what priorities the customer is associated with (typically available through some A4C – authentication, authorization, access control, accounting and charging server), has connection to a network resource manager that knows resource utilization of the access network and could thus optimize user perceivable QoS for all currently served users.

Annex C: List of TDs

TD(04)001
Performance Evaluation of different proxy concepts in UMTS and HSDPA networks
Marc Necker, Michael Scharf and Andreas Weber, University of Stuttgart and Alcatel (Germany)
TD(04)002
An Analytical Model for the Downlink Capacity of a UMTS Network, Dirk Staehle, University of Wuerzburg (Germany)
TD(04)003
Network Planning Problems in 3G/4G Wireless Systems, Andrey Krendzel, Yevgeni Koucheryavy, Tampere Univ. of Technology (Finland)
TD(04)004
Resource control in mobile networks based on economic modeling, Vasilios Siris, ICS/FORTH (Greece)
TD(04)005
Quality Assessment for H.264 Coded Low-Rate and Low-Resolution Video Sequences, Michal Ries, University of Technology Vienna (Austria)
TD(04)006
QoS Architecture for Mobile Multicast Multimedia Services, Paulo Mendes, DoCoMo Euro-Labs (Germany)
TD(04)007
Protocol Behavior: More effort, more gains? Lefteris Mamatas, Demokritos University of Thrace (Greece)
TD(04)008
Performance evaluation and comparison of Westwood+, New Reno and Vegas TCP congestion control, Saverio Mascolo, Politecnico di Bari (Italy)
TD(04)009
Mode Adaptivity in Broadcast Wireless Networks, Giovanni Giambene, University of Siena (Italy)
TD(04)010
Testing IPv4/IPv6-Based Unicast/Multicast Routing Protocols Using Linux and FreeBSD, Tudor Blaga, Technical University of Cluj-Napoca (Romania)
TD(05)001
A Dynamic Adaptive Acknowledgment Strategy for TCP over Multihop Wireless Networks, Ruy de Oliveira and Torsten Braun, University of Bern (Switzerland)
TD(05)002
Performance evaluation of internet access over a precommercial UMTS network, M. Catalan, C. Gomez, D. Viamonte, J. Paradells, A. Calveras, F. Barcelo, UPC (Spain)
TD(05)003
Simulative Performance Evaluation of a Mobile Peer-to-Peer File Sharing System, Tobias Hossfeld, University of Wuerzburg (Germany)
TD(05)004
Robustness Analysis of the Wireless LAN MAC Protocols with QoS Support
Rastin Pries, University of Wuerzburg (Germany)
TD(05)006
Deployment Scenarios and Applications Characterization for Enhanced UMTS Simulation, Jaime Ferreira and Fernando Velez, Portugal Telecom Inovacao and University of Beira Interior (Portugal)

TD(05)007
HSDPA flow level performance: the impact of key system and traffic aspects J.L. van den Berg, Remco Litjens and Joost Laverman, TNO ICT (The Netherlands)
TD(05)008
Non-preemptive sumD-BMAP/D/1/K queuing system modeling the frame transmission process over wireless channels, Dmitri Moltchanov and Yevgeni Koucheryavy, Tampere University of Technology (Finland)
TD(05)009
Can Terminal Teletraffic Theory Be Liberated from the Main Illusions? Stoyan Poryazov, Institute of Mathematics and Informatics, Bulgarian Academy of Sciences (Bulgaria)
TD(05)011
Orthogonal-Variable-Spreading-Factor Code Allocation Strategy Using Genetic Algorithms, Marius Cinteza, Tatiana Radulescu and Ion Marghescu, Polytechnical University Bucharest (Romania)
TD(05)012
MoSReM: Mobile Multicast Protocol using Dynamic Branching Node based Tree Khalid Al-Begain and Yewen Cao, University of Glamorgan (UK)
TD(05)013
A new approach to service differentiation: non-congestive queueing, Leftherios Mamatas and Vassilis Tsaoussidis, DUT (Greece)
TD(05)014
A simple heuristic model for the IP packet service time distribution in UMTS networks, Marc Necker, University of Stuttgart (Germany)
TD(05)015
Coverage and capacity planning for 3G and beyond mobile networks, Josephina Antoniou, Vasos Vassiliou, and Andreas Pitsillides UCY (Cyprus)
TD(05)016
Distributed monitoring architecture for attack detection , Gerorg Carle, University of Tuebingen (Germany)
TD(05)017
Location assisted fast vertical handover for UMTS/WLAN overlay networks, Tom Van Leeuwen, University of Gent (Belgium)
TD(05)019
Adaptive video streaming in Mobile and wireless networks, Mathias Dick, Technical University of Braunschweig (Germany)
TD(05)020
Impact of Link State Changes and Inaccurate Link State Information on Mobility Support and Resource Reservations, Peters Liesbeth, Moerman Ingrid, Dhoedt Bart, Demeester Piet (Ghent University, Belgium)
TD(05)021
Refined PFTK-Model of TCP Reno Throughput in the Presence of Correlated Losses, Roman Dunaytsev, Yevgeni Koucheryavy, Jarmo Harju (Tampere University of Technology, Finland)
TD(05)034
Evaluation of a Multi-server Delay System with a Generalized Poisson Input Stream, Seferin Mirtchev, Technical University Sofia (Bulgaria)
TD(05)035
Reliable Mobile Multicast Transport for Multimedia Content Delivery, Ilka Miloucheva, Salzburg Research(Austria)

TD(05)036
Implementation of VoIP over Satellite, Ulla Birnbacher, Graz University of Technology (Austria)

TD(05)037
Reference-Free Video Quality Metric for Mobile Streaming Applications, Michal Ries, University of Technology Vienna (Austria)

TD(05)038
Emergency Services: Resource Management and QoS Control, Nikola Rozic, Dinko Begusic, University of Split (Croatia), and Gorazd Kandus, University of Ljubljana (Slovenia)

TD(05)039
An Enhanced Approach for Leader Election in Ad Hoc Networks, Pascal Lorenz, Univ. Haute Alsace (France)

TD(05)040
CA-RTO: a contention adaptive retransmission timeout for TCP, Ioannis Psaras, DUT (Greece)

TD(05)041
New third-party AAA framework and signaling protocol for 4GWW, Fintan McEvoy, Ivan Ganchev, Máirtín Ó Droma, University of Limerick (Ireland)

TD(05)042
Akogrimo – Business Models and Charging for Grid Services, Burkhard Stiller, Univ. of Zürich (Switzerland)

TD(05)043
MobileMAN Project: Building Campus-Wide MANETs through Cross-Layering, Andrea Passarella, Cambridge University (UK)

TD(05)044
AODV and multi interfaces, Oivind Kure, Q2S centre, NTNU (Norway)

TD(05)045
Multiuser capacity and fairness evaluation of channel/QoS aware multiplexing algorithms, M. Carmen Aguayo-Torres, University of Malaga (Spain)

TD(05)046
Measurement Based Admission Control, Thomas Bonhert, University of Coimbra (Portugal)

TD(05)047
Impact of HSDPA Iub Flow Control on System Performance, Marc Necker and Andreas Weber, University of Stuttgart and Alcatel SEL AG (Germany)

TD(05)048
Analytical Model for Multimedia provisioning over Downlink in 3.5G Wireless Network, Khalid Al-Begain, Univ. of Glamorgan (UK)

TD(05)049
Improving TCP throughput in 802.11 WLANs with high delay variability, Vasilios Siris, ICS-FORTH (Greece)

TD(05)050
Estimation of QoS dynamics in the wireless networks, A. Kajackas, A. Anskaitis, D. Gursnys, L. Pavilanskas, Vilnus Technical University (Lithuania)

TD(05)051
Enhanced UMTS cost/revenue optimization in offices scenarios, Orlando Cabal, University of Biera Interior (Portugal)

TD(05)052
A More Realistic Random Direction Mobility Model, Bernd Gloss, Michael Scharf and Daniel Neubauer, University of Stuttgart (Germany)
TD(05)053
Dimensioning of Hardware Components in UMTS Networks with Sectorized NodeBs, Andreas Maedler, University of Wuerzburg (Germany)
TD(05)054
Telecommunications over High Altitude Platforms, Gorazd Kandus, Institute of Josef Stefan (Slovenia)
TD(06)001
Impact of the variance of the call duration on the performance of WCDMA cellular network, Francisco Barcelo (UPC, Spain)
TD(06)002
Overload control and Service Level Agreements in service architectures, Jens Andersson (Lund Institute of Technology, Sweden)
TD(06)003
Performance Modeling and Analysis of a Bottleneck Node in an IEEE 802.11 Ad-hoc Network, Hans van den Berg, Michel Mandjes, Frank Roijers (TNO ICT, University of Twente, Centre for Mathematics and Computer Science, Korteweg-de Vries Institute, University of Amsterdam, the Netherlands)
TD(06)004
PeerMart and PeerMint: Pricing and Accounting in Peer-to-Peer Networks, David Hausheer (University of Zuerich, Switzerland)
TD(06)005
Handover Strategies for Heterogeneous WLAN/UMTS Networks, Rastin Pries (University of Würzburg, Germany)
TD(06)006
An Analytic Model for the Enhanced Uplink in UMTS, Andreas Mäder (University of Würzburg, Germany)
TD(06)007
Impact of SLA to VoIP QoS, Martin Klimo, Juraj Smiesko (University of Zilina), Slovakia
TD(06)008
Planning of Wireless Broadband Access for Rural and Remote Areas, Ignat Stanev (Higher College of Telecommunications and Posts, Bulgaria)
TD(06)009
MTS Video Streaming Test Bed UMTS, Michal Ries (University of Technology Vienna, Austria)
TD(06)010
Evaluating and Improving Alternative Multicast Solutions: CastGate and CastGate with PIM-SM, Tudor Blaga, Virgil Dobrota (Technical University of Cluj-Napoca, Romania)
TD(06)011
DiffServ in Ad hoc networks, Tor K. Moseng (Q2S centre, NTNU, Norway)
TD(06)012
Call Admission Control in IEEE 802.11e EDCA-based WLANs (Initial Steps), Boris Bellalta, Michela Meo, Miquel Oliver (Universitat Pompeu Fabra, Spain and Politecnico di Torino, Italy)

TD(06)013
HSDPA and MBMS Transmissions via S-UMTS, Giovanni Giambene, Samuele Giannetti, Victor Y. H. Kueh, Cristina Párraga Niebla (U. of Siena, Italy, University of Surrey, UK, German Aerospace Center (DLR), Oberpfaffenhofen, Germany)
TD(06)014
Quality of Service in the IP Multimedia Subsystem, Alberto Hernandez, M. Álvarez-Campana, E. Vázquez (Universidad Politecnica de Madrid, Spain)
TD(06)015
Scheduling Mechanisms for QoS Differentiation in HSDPA Networks, Marc C. Necker (University of Stuttgart, Germany)
TD(06)016
Optimized Stateless Broadcasting in Wireless Multi-hop Networks, Marc Heissenbuttel, Torsten Braun, Markus Walchli, Thomas Bernoulli (University of Bern, Switzerland)
TD(06)017
Tele-Traffic Simulation for Mobile Communication Systems Beyond 3G, Jesús M. Juárez Valero, Rui R. Paulo, Fernando J. Velez (University of Beira Interior, Portugal)
TD(06)018
NSIS: Next Steps in Signaling. A new IP QoS Signaling Protocol, Georgios Karagiannis (University of Twente, The Netherlands)
TD(06)019
Wi-Fi Neutral Operator: Promoting cooperation for network and service growth, Carlos Macián (Universitat Pompeu Fabra, Spain)
TD(06)020
Modeling of Service Discovery in Ad Hoc Networks, Fei Liu and Geert Heijenk (University of Twente, The Netherlands)
TD(06)021
Perceptual VoIP Quality Estimation in Wireless Networks, Thomas Fichtel (Salzburg Research, Austria)
TD(06)022
Jakub Jakubiak, Dmitri Moltchanov, Yevgeni Koucheryavy (Tampere Univ. of Technology, Finland), Practical performance evaluation of IEEE WLAN technologies for VANET environment
TD(06)025
Edmundo Monteiro (Coimbra University, Portugal), Signaling and Service Negotiation in the EuQoS Architecture
TD(06)026
Dirk Staehle (University of Wuerzburg, Germany), On the soft and code capacity of the UMTS downlink
TD(06)027
Remco Litjens (TNO ICT, The Netherlands), Performance analysis of access selection and transmit diversity in multi-access networks
TD(06)028
Sylwia Romaszko (Univ. of Antwerp, Belgium), Neighbour and Energy-Aware Contention Avoidance MAC Protocol for Wireless Ad Hoc Networks
TD(06)029
Andreas Kassler (Karlstad University, Sweden), QAMNet: Providing Quality of Service for Ad-hoc Multicast Enabled Networks

TD(06)030
Algimantas Kajackas A. Anskaitis, D. Gursnys (Vilnius Gediminas Technical University, Lithuania), Peculiarities supporting of QoS at edge of cells
TD(06)031
Ilka Miloucheva (Salzburg Research, Austria), QoS Managament for efficient content delivery
TD(06)032
Saverio Mascolo (Politechnico di Bari, Italy), Testing TCP versus TFRC over wired/wireless Internet
TD(06)033
Fei Liu, Geert Heijenk (University of Twente, The Netherlands) Context Discovery Using Attenuated Bloom Filters in Ad-hoc Networks
TD(06)034
Panagiotis Papadimitriou, Vassilis Tsaoussidis (Demokritos University, Greece) Evaluating TCP Mechanisms for Real-Time Streaming over Satellite Links
TD(06)035
M. Carmo, B. Carvalho, J. Sá Silva, E. Monteiro, P. Simões, M. Curado, F. Boavida (University of Coimbra, Portugal) NSIS-Based Quality of Service and Resource Allocation in Ethernet Networks
TD(06)036
Pascal Kurtansky, Burkhard Stiller (ETH Zurich, Switzerland; University of Zurich, Switzerland) State of the Art Prepaid Charging for IP Services
TD(06)037
Marc Danzeisen, Torsten Braun, Isabel Steiner, Marc Heissenbüttel (University of Bern, Switzerland) On the Potential of Heterogeneous Networks
TD(06)038
José Villalón, Pedro Cuenca, Luis Orozco-Barbosa (Universidad de Castilla La Mancha, Spain) A Novel IEEE 802.11e-based QoS Protocol for Voice Communications over WLANs
TD(06)039
D. Moltchanov (Tampere University of Technology, Finland) State description of wireless channels using change-point statistical tests
TD(06)040
Philipp Hurni, Torsten Braun, Laura Marie Feeney (University of Bern, Switzerland; Swedish Institute of Computer Science, Sweden) Simulation and Evaluation of Unsynchronized Power Saving Mechanisms in Wireless Ad hoc Networks
TD(06)041
Jan De Jongh (TNO ICT, the Netherlands) Evaluating Transmit Power Control In Ad Hoc Networks Through Simulation And Channel Emulation
TD(06)042
Cristian Morariu (Univ. of Zurich, Switzerland) An Integrated Accounting and Charging Architecture for Mobile Grids
TD(06)043
N. Ketaff (Univ. of Haute Alsace, France) A cross layer optimization for ACOR
TD(06)045
Orlando Cabral (Univ. de Beira Interior, Portugal) Urban Cellular Planning Optimisation of Multi-service Enhanced UMTS Based in Economic Issues
TD(06)046
Marc Necker (University of Stuttgart, Germany) Global Interference Coordination in 802.16e Networks

TD(06)047
Michal Ries (Vienna Univ. of Technology, Austria) Content Based Video Quality Estimation
TD(06)048
Tomaž Javornik (Jozef Stefan Institute, Slovenia) Comparison of WiMAX coverage at 450MHz
TD(06)049
Maria Kihl (Lund University, Sweden) User-perceived performance in VANETs
TD(06)050
Alexandru Bikfalvi (Technical University of Cluj-Napoca, Romania) The Management Infrastructure of a Network Measurement System for QoS Parameters
TD(06)051
Thomas Staub (Univ. of Bern, Switzerland) Multipath Routing in Wireless Mesh Networks
TD(06)052
Geert Heijenk (Univ. of Twente, the Netherlands) Scheduling in the UMTS enhanced uplink
TD(06)053
Mario Cagalj (FESB, Croatia) Selfish Behavior in CSMA/CA Networks
TD(06)054
Paul Flynn, Ivan Ganchev, Mairtin O'Droma (Univ. of Limerick, Ireland) Service Advertisement, Discovery and Association over Wireless Billboard Channels in future UCWW
TD(07)001
Dirk Staehle (University of Würzburg, Germany) An HSPDA Long-term Bandwidth Model
TD(07)002
Fatiha Tolba (University of Haute Alsace, France) Mobility management and energy preserve in wireless ad hoc networks
TD(07)003
Torsten Braun (University of Bern, Switzerland) Secure Remote Management and Software Distribution for Wireless Mesh Networks
TD(07)004
Vasilios Siris (FORTH-ICS, Greece) Resource Control for the EDCA Mechanism in Multi-Rate IEEE 802.11e
TD(07)005
Thomas Bohnert (University of Coimbra, Portugal) Non-Parametric and Self-Tuning Measurement-based Admission Control
TD(07)006
Roman Dunaytsev (Tampere University of Technology, Finland) An Analytical Comparison of the Slow-but-Steady and Impatient Variants of TCP NewReno
TD(07)007
Seferin Mirtchev (Technical University of Sofia, Bulgaria) Study of Queueing System with State Dependant Mean Service Time
TD(07)008
Marc Necker (University of Stuttgart, Germany) Local Interference Coordination in 802.16e Networks
TD(07)009
Eduard Popovici (University Politechnic Bucharest, Romania) Coding scheme impact on the IP-QoS network utilization and voice quality

TD(07)010
Michal Ries (INTHFT – TU Wien, Austria) Motion Based Reference-Free Quality Estimation
TD(07)011
Khalid Al-Begain (Univ. of Glamorgan, UK) IMS based Next Generation Mobile Service Creation Facility - The Glamorgan experiment
TD(07)012
Zigmund Orlov (University of Stuttgart, Germany) Improvement of Video Streaming QoS by Application-aware Queue Management in UMTS/HSDPA networks
TD(07)013
Michael Scharf (University of Stuttgart, Germany) Quick-Start TCP: Performance Evaluation and Open Issues
TD(07)014
M. Carmen Aguayo-Torres University of Malaga, Spain) Impact of transport protocols in application throughput for wireless-wired networks
TD(07)015
Boris Bellalta (UPF, Spain) Flow-Level evaluation of Call Admission Control schemes in WMM WLANs
TD(07)016
Hans van den Berg (TNO ICT, The Netherlands) Fluid flow performance modeling of a relay node in an IEEE 802.11 ad-hoc network
TD(07)017
Fernando Velez (University of Beira Interior, Portugal)
Cellular Planning of an IEEE 802.16 Wireless Metropolitan Area Network
TD(07)018
Anna Sfairopoulou (UPF, Spain) Dynamic measurement-based codec selection for VoIP in multirate 802.11
TD(07)019
Gorazd Kandus (Jozef Stefan Institute, Slovenia) Channel Decoder Assisted Adaptive Coding and Modulation for HAP Communications
TD(07)020
Andreas Kassler (Karlstad University, Sweden): On Packet Aggregation for VoIP in Wireless Meshed Networks
TD(07)021
Gabriel Lazar (Technical University of Cluj-Napoca, Romania): Cross-Layer Architecture for H.264 Video Streaming in Heterogeneous DiffServ Networks
TD(07)022
Aleksi Penttinen (Helsinki Univ. of Technology, Finland): Flow-optimized random access for wireless multihop networks
TD(07)023
Luca De Cicco (Politecnico di Bari, Italy): TCP Congestion Control over 3G Communication Systems: an Experimental Evaluation of New Reno, BIC and Westwood+
TD(07)024
Jana Uramova (Univ. of Zilina. Slovakia): Modelling of Packet Flow by Unary Code
TD(07)025
David Morales (Univ. of Malaga, Spain): Impact of Feedback Channel Delay on Adaptive OFDMA Systems
TD(07)026

Veselin Rakocevic (City University London, UK): Cross-Layer Traffic Control in Mesh Networks
TD(07)027
Martin Waldburger (Univ. of Zurich, Switzerland): Legally Compliant Contract Formation for Commercial Value Added Services in the Internet
TD(07)028
Sylwia Romaszko (Univ. of Antwerp, Belgium): Controlled contention-based access to the medium in ad hoc WLANs, TD(07)028
TD(07)029
Irene de Bruin (Twente Institute for Wireless and Mobile Communications, the Netherlands): Performance analysis of VoiP over HSDPA in a multi-cell environment
TD(07)030
Aurimas Anskaitis (Vilnius Gediminas Technical University, Lithuania): Peculiarities supporting of QoS at edge of cells
TD(07)031
Vasos Vassiliou (University of Cyprus, Cyprus): Delivering Adaptive Scalable Video over the Wireless Internet
TD(07)032
Shabnam Aprin (Lund University, Sweden): Evaluation of an Intelligent Route Guidance System based on Inter-vehicle Communication
TD(07)033
Manuel Alvarez-Campana (UPM, Spain): Performance evaluation of TCP over HSDPA based on measurements
TD(07)034
Torsten Braun (University of Bern, Switzerland): Power Saving in Wireless Multi-hop Networks
TD(07)035
Stoyan Poryazov (IMI – Bulgarian Academy of Science, Bulgaria): Offered Traffic Concepts in the Overall Network Teletraffic Theory
TD(07)036
Zinon Zinonos (University of Cyprus, Cyprus): A Component-based Analysis of the Mobile Ipv6 Handover from the Applications' Perspective
TD(07)037
Gabriel Lazar (Technical University of Cluj-Napoca, Romania): Performance of Wireless IEEE 802.11e-Based Devices with Multiple Hardware Queues
TD(07)038
Vasilios Siris (FORTH-ICS, Greece): Heraklion MESH: An Experimental Metropolitan Multi-Radio Mesh Network
TD(07)039
Jana Uramova (Univ. of Zilina, Slovakia): Information model of network throughput with the application of unary code
TD(07)040
Barbara Staehle, (University of Würzburg, Germany): Impact of Energy Models on Energy Efficient Sensor Network Routing
TD(07)041
Anderj Vilhar (Jozef Stefan Institute, Slovenia): MAP selection algorithms based on future movement prediction capability
TD(07)042
Boris Bellalta (Univ. Pompeu Fabra, Spain): Joint Admission Control and VoIP Codec Selection Policies in WLANs

TD(07)043
Dmitri Moltchanov (Tampere Univ. of Technology, Finland): Cross-layer performance control of wireless channels
TD(07)044
Desislava Dimitrova (Univ. of Twente, The Netherlands): Flow-level performance comparison of packet scheduling schemes for UMTS EUL
TD(07)045
Fernando Velez (Univ. of Beira Interior, Portugal): Simulation of IEEE 802.11e in the context of interoperability
TD(07)046
Orlando Cabral (Univ. of Beira Interior, Portugal): Cost/Revenue Optimisation of Multi-service Cellular Planning for Business Centre E-UMTS
TD(07)047
Fernando Velez (Univ. of Beira Interior, Portugal): Design and Planning of IEEE 802.16 Networks
TD(07)048
Florian Floimair (Salzburg Research, Austria): MINER: Measurement Infrastructure for Network Research
TD(07)049
Alexey Vinel (State University of Aerospace Instrumentation, Russia): Optimization of contention resources for best-effort scheduling type in WiMAX
TD(07)050
Saverio Mascolo (Politecnico di Bari, Italy): An Experimental Investigation of the Congestion Control used by Skype
TD(07)051
Andreas Kassler (Karlstad University, Sweden): TCP performance across internet connected MANETs
TD(07)052
Stefano Avallone (University of Naples "Federico II", Italy): Channel assignment algorithms for multi-radio wireless
TD(07)053
Carles Gomez, Natalia Vesselinova, J. Paradells, F. Barcelo (Technical University of Catalonia, Spain): Routing in MANETs: protocol settings, tradeoffs and energy consumption
TD(08)001
Michal Ries (TUWien, Austria): On the willingness to pay in relation to delivered quality of mobile video streaming
TD(08)002
Marc Necker (University of Stuttgart, Germany): Graph-based distributed interference coordination in cellular IEEE 802.16e networks
TD(08)003
Christian Mueller (University of Stuttgart, Germany): Design and evaluation of detection algorithms for base stations outages
TD(08)004
Aurimas Anskaitis (Vilnius Gediminas Technical University, Lithuania): Quality of de facto Provided Service
TD(08)005
Fernando Velez (Univ. of Beira Interior, Portugal): HSDPA/WiFi RAT selection based on load suitability
TD(08)006

Andrei Bogdan Rus (Technical University of Cluj-Napoca, Romania): WAN emulator software tool
TD(08)007
Alexey Vinel (SPII RAN, Russia): Model for the Study of Broadcasting in Wireless Billboard Channels.

Annex D: List of scientific papers published in connection to COST 290 results

Journals, book chapters and books

1. Jarmo Harju, Geert J. Heijenk, Peter Langendörfer, Vassilios Siris (Eds.), "Wired/Wireless Internet Communications", LNCS, Vol. 5031, 2008, ISBN 978-3-540-68805-1

2. Yevgeni Koucheryavy, Giovanni Giambene, Dirk Staehle, Francisco Barcelo-Arroyo, Torsten Braun, Vasilios Siris (Eds.) "Traffic and QoS Management in Wireless Multimedia Networks", Springer US, 2009. ISBN 978-0-387-85572-1.

3. S. Balandin, D. Moltchanov, Y. Koucheryavy (Eds.) "Next Generation Teletraffic and Wired/Wireless Advanced Networking NEW2AN 2008 and 1st Russian Conference on Smart Spaces, ruSMART 2008", St.Petersburg, Russia, Springer, Lecture Notes on Computer Science 5174, September 2008.

4. M. Alvarez-Campana, E. Vázquez, J. Vinyes, V. Villagra, "Measuring quality of experience of Internet Access over HSDPA", in "Wireless and Mobile Networking", pp. 225-234, Springer, Boston, 2008 (ISSN 1571-5736, ISBN 978-0-387-84838-9).

5. Y. Koucheryavy, J. Harju, A. Sayenko (Eds.) "Next Generation Teletraffic and Wired/Wireless Advanced Networking", 7th International Conference, NEW2AN 2007, St.Petersburg, Russia, Springer, Lecture Notes on Computer Science 4712, 2007.

6. F. Boavida, E. Monteiro, S. Mascolo, Y. Koucheryavy (Eds.) "Wired/Wireless Internet Communications", 5th International Conference, WWIC 2007, Coimbra, Portugal, May 23-25, 2007, Proceedings. Springer 2007, ISBN 978-3-540-72694-4.

7. E. Vázquez, M. Álvarez-Campana, A. B. García, A. Hernández, "Efficiency and quality of service issues in MPLS transport for the UMTS access network", Computer Communications, Elsevier, vol. 29, num. 7, april 2006. pp. 820-826.ISSN 0140-3664.

8. Y. Koucheryavy, V.B. Iversen, J. Harju (Eds.) "Next Generation Teletraffic and Wired/Wireless Advanced Networking", 6th International Conference, NEW2AN 2006, St.Petersburg, Russia, Springer, Lecture Notes on Computer Science 4003, 2006.

9. T. Braun, G. Carle, S. Fahmy, Y. Koucheryavy (Eds.) "Wired/Wireless Internet Communications", WWIC 2006, Bern, Switzerland, Springer, Lecture Notes on Computer Science 3970, 2006.

10. T. Braun, G. Carle, Y. Koucheryavy, V. Tsaoussidis (Eds.) "Wired/Wireless Internet Communications", WWIC 2005, Xanthi, Greece, Springer, Lecture Notes on Computer Science 3510, 2005.

11. Torsten Braun, Georg Carle, Yevgeni Koucheryavy, Vassilis Tsaoussidis: Editorial - Wired/Wireless Internet Communications, Computer Communications , Vol. 29, Nr. 13-14, August 21, 2006, pp. 2599-2600, Elsevier, ISBN 0140-3664.

12. Thomas M. Bohnert, Yevgeni Koucheryavy, Marcos Katz, Jakub Jakubiak, Eugen Borcoci, Edmundo Monteiro "On Evaluating a WiMAX Access Network for Isolated Research and Data Networks using NS-2", IEEE JCOMMS, October 2007.

13. E. Vázquez, M. Álvarez-Campana, A. B. García, "Efficiency Issues in MPLS Transport for the UMTS Access Network ", Lecture Notes in Computer Science, Volume 3266, pp. 204-213, Springer-Verlag, September 2004.

14. Dmitri Moltchanov, Yevgeni Koucheryavy and Jarmo Harju, "Composite Model of Packetized VBR Source for Next Generation All-IP Mobile Networks". Performance Evaluations, Springer, May 2007.

15. Dmitri Moltchanov, Yevgeni Koucheryavy and Jarmo Harju "State description of wireless channels using change-point statistical tests", Journal of Internet Engineering (JIE), February 2007.

16. G. Boggia, P. Camarda, L. A. Grieco, S. Mascolo "Feedback-based Control for Providing Real-time Services using the 802.11e MAC" IEEE/ACM Trans. on Networking - April, 2007.

17. Dmitri Moltchanov, Yevgeni Koucheryavy and Jarmo Harju "Loss performance model for wireless channels with autocorrelated arrivals and losses", Computer Communications Journal, Volume 29, Issues 13-14, 21 August 2006, Pages 2646-2660.

18. Roman Dunaytsev, Yevgeni Koucheryavy and Jarmo Harju "The PFTK-model revised", Computer Communications Journal, Volume 29, Issues 13-14, 21 August 2006, Pages 2671-2679.

19. G. Boggia, P. Camarda, L.A. Grieco, S. Mascolo "Energy Efficient Feedback-based Scheduler for Delay Guarantees in IEEE 802.11e Networks", Computer Communications, special issue, Volume 29, Number 13-14, page 2680-2692,Aug. 21 2006.

20. Dmitri Moltchanov, Yevgeni Koucheryavy and Jarmo Harju "An integrated model of packetized VBR teletraffic source for cellular NG All-IP wireless networks", Computer Communications, Volume 29, Issue 8, 15 May 2006, Pages 957-968.

21. Luigi Alfredo Grieco, Saverio Mascolo "A Congestion Control Algorithm for the Deep Space Internet Space Communications", An International Journal, Special issue on Network Protocols, vol. 20, pp. 155--160 ISSN: 0924-8625, 2005.

22. Dmitri Moltchanov, Yevgeni Koucheryavy and Jarmo Harju "Cross-layer modeling of wireless channels for data-link and IP layer performance

evaluation", Computer Communications, Volume 29, Issue 7, 24 April 2006, Pages 827-841.

23. Gennaro Boggia, Pietro Camarda, Luigi Alfredo Grieco, Saverio Mascolo Feedback-based bandwidth allocation with call admission control for providing delay guarantees in IEEE 802.11e networks Computer Communications, Special Issue, Elsevier, Volume 28, Number 3, page 325--337, Feb. 2005.

24. L. A. Grieco, S. Mascolo "Intraprotocol Fairness and Interprotocol Friendliness of the TFRC Congestion Control Algorithm", IEE Electronics Letters, vol. 40, no. 5, 4th March 2004.

25. S. Mascolo, L. A. Grieco, R. Ferorelli, P. Camarda, G. Piscitelli "Performance evaluation of Westwood+ TCP congestion control", Performance Evaluation, Volume 55, Issue 1-2, pp. 93-111, Jan. 2004.

26. L.A. Grieco, S. Mascolo "Adaptive Rate Control for Streaming Flows over the Internet", ACM Multimedia Systems Journal, Regular paper, Volume 9, Issue 6, pp. 517 - 532, Jun. 2004.

27. Kajackas A., Anskaitis A., Gursnys D. Individual Quality of Service concept in Next Generations Telecommunications networks. Electronics and Electrical Enginering. 2005. 4(60) p. 11-16.

28. Kajackas A., Anskaitis. Investigation the ability of objective measures of the perceptual speech quality in mobile networks. Electronics and Electrical Enginering. 2005. Nr. 7(63) p. 10-15.

29. Kajackas, D. Gursnys. Investigation of Voice Frame Erasures in GSM. Electronics and Electrical Engineering. 2006. Nr. 4. p. 47-53.

30. Kajackas A., Anskaitis A., Gursnys D. Peculiarities of Testing the Impact of Packet Loss on Voice Quality. Electronics and Electrical Engineering. ISSN 1392 – 1215 2008. Nr. 2(82) p. 35-40.

31. Yang, Y. and Haverkort, B.R.H.M. and Heijenk, G.J. (2008) A centralized feedback control model for resource management in wireless networks. Praxis der Informationsverarbeitung und Kommunikation, 31 (1). pp. 51-56. ISSN 0930-5157.

32. Liu, F. and Heijenk, G.J. (2007) Context discovery using attenuated Bloom filters in ad-hoc networks. Journal of Internet Engineering, 1 (1). pp. 49-58. ISSN 1791-177X.

33. Heijenk, G.J. and Liu, F. (2006) Interference-based routing in multi-hop wireless infrastructures. Computer Communications, 29 (13-14). pp. 2693-2701. ISSN 0140-3664.

34. Ait Yaiz, R. and Heijenk, G.J. (2005) Providing QoS in Bluetooth. Cluster Computing, 8 (2-3). 223- 231. ISSN 1386-7857

35. Jaime Ferreira and Fernando J. Velez, "Enhanced UMTS Services and Applications Characterisation," Telektronikk, Vol. 101, No. 1, 2005, pp. 113-131.

36. Orlando Cabral, Alberto Segarra, Fernando J. Velez, "Event-Driven Simulation for IEEE 802.11e Optimization," IAENG International Journal of Computer Science (IJCS), Vol. 35 , No. 1, pp. 161 -173 , Feb. 2008

37. Marc Heissenbüttel, Torsten Braun, Thomas Bernoulli, Markus wälchli: BLR: Beacon-Less Routing Algorithm for Mobile Ad-Hoc Networks, Computer Communications Journal , Vol. 27, Nr. 11, July 1, 2004, pp. 1076-1086, Elsevier, ISSN 0140-3664.

38. Attila Weyland, Thomas Staub, Torsten Braun: Comparison of motivation-based cooperation mechanisms for hybrid wireless networks, Computer Communications , Vol. 29, Nr. 13-14, August 21, 2006, pp. 2661-2670, Elsevier, ISSN 0140-3664.

39. Marc Heissenbüttel, Torsten Braun, David Jörg, Thomas Huber: A Framework for Routing in Large Ad-hoc Networks with Irregular Topologies, Ad Hoc & Sensor Wireless Networks, Vol. 2, Nr. 2, January, 2006, pp. 1-24, Old City Publishing, Inc., ISSN 1551-9899.

40. Ruy de Oliveira, Torsten Braun: A Smart TCP Acknowledgment Approach for Multihop Wireless Networks, Transactions on Mobile Computing, Vol. 6, Nr. 2, February, 2007, pp. 192-205, IEEE, ISSN 1536-1233.

41. Torsten Braun, Georg Carle, Sonia Fahmy, Yevgeni Koucheryavy: Editorial - Wired/Wireless Internet Communications, Computer Communications, Vol. 30, January 20, 2007, pp. 1441–1442, Elsevier, ISSN 0140-3664.

42. D. Morales-Jiménez, J. J. Sánchez, G. Gómez, M. C. Aguayo-Torres, J.T. Entrambasaguas, "Imperfect adaptation in next generation OFDMA cellular systems", Journal of Internet Engineering, vol. 2, no.2, 2008.

43. J.T. Entrambasaguas, M.C. Aguayo-Torres, G. Gómez, J.F. Paris, "Multiuser capacity and fairness evaluation of channel/QoS aware multiplexing algorithms", IEEE Network magazine, Volume: 21, Issue: 3, May-June 2007.

44. M. Mohorcic, A. Svigelj, G. Kandus »Traffic class dependent routing in ISL networks«. IEEE trans. aerosp. electron. syst., 2004, vol. 39, pp. 1160-1172.

45. A. Svigelj, M. Mohorcic, G. Kandus, A. Kos, M. Pustisek, J. Bester »Routing in ISL networks considering empirical IP traffic« IEEE j. sel. areas commun., 2004, vol. 22, pp. 261-272.

46. T. Javornik, M. Mohorcic, A. Svigelj, I. Ozimek, G Kandus »Adaptive coding and modulation for mobile wireless access via high altitude platforms« Wirel. pers. commun., 2005, vol. 32, pp. 301-317.

47. A. Vilhar. R. Novak, G. Kandus »MAP selection algorithms based on future movement prediction capability in synthetic and realistic environment Journal on commun. softw. syst., 2008, vol. 4, no. 2, pp. 122-130.

48. A. Sfairopoulou, B. Bellalta, C. Macian; "How to tune VoIP codec selection in WLANs?", Communications Letters, IEEE. Volume 12, Issue 8, Aug. 2008 Page(s):551 - 553.

49. B. Bellalta, M. Meo, M. Oliver; "VoIP Call Admission Control in WLANs in presence of elastic traffic ". IEEE Journal of Communication Software and Systems. December 2006.

50. A. Sfairopoulou, C. Macian, B. Bellalta; "Adaptive codec selection for VoIP in multi-rate WLANs". To be published by Idea Group Inc., June 2008.

51. B. Bellalta, M. Meo; "Call Admission Control in WLAN". in book: Y. Zhang, H. Hu and M. Fujise (Editors), "Resource, Mobility and Security Management in Wireless Networks and Mobile Communications", Auerbach Publications, CRC Press, USA, Sept. 2006 (ISBN: 0849380367).

52. D. Moltchanov "Modeling local stationary behavior of Internet traffic," J. of Communications Software and Systems (JCOMSS), V.4, N.1, pp. 41-53.

53. D. Moltchanov "Automatic bandwidth adjustment for content distribution in MPLS networks," J. Advances in Multimedia, V.8, Hindawi Publishing.

54. D. Moltchanov "Cross-layer performance control of wireless channels using active local profiles," JCOMSS special issue on "Cross-layer design for QoS support in wireless and hybrid networks".

55. Tomislav Grgic, Vedran Huskic, Maja Matijasevic, "Resource authorization in IMS with known multimedia service adaptation capabilities", In New Directions in Intelligent Interactive Multimedia, subseries of Studies in Computational Intelligence. 142 (2008), pp. 293-302.

56. N. Kettaf, H. Abouaissa, P. Lorenz, "An efficient heterogeneous key management approach for secure multicast communications in ad hoc networks", Telecommunication Systems, Springer, Volume 37, Numbers 1-3, Mars 2008, pp. 29-36, ISSN 1018-4864.

57. M. Brahma, A. Abouaissa, P. Lorenz, "A Service Differentiation and Traffic Engineering Scheme for Mobile Ad-hoc Network", International Journal Sensor Networks, Volume 3, Issue 2, 2008, pp. 107 - 114 2008. ISSN 1748-1279.

58. F. Tolba, D. Magoni, P. Lorenz, Saving Energy and Maximizing Connectivity by Adapting Transmission Range in 802.11g MANETS, Journal of Communications Software and Systems (JCOMSS), Volume 3, Number 2, June 2007, pp. 81-89. ISSN 1845-6421.

59. N. Kettaf, H. Abouaissa, T. Vu Duong, P. Lorenz, "An efficient QoS routing algorithm for solving MCP in ad hoc networks ", Telecommunication Systems, Kluwer Academic Publishers, Volume 33, No 1-3, November 2006, pp. 255-267. ISSN 1018-4864.

60. K. Shami, D. Magoni, P. Lorenz, "Autonomous, Scalable and Resilient Overlay Infrastructure", Journal of Communications and Networks, Vol.8, No.4, December 2006, pp.378-390. ISSN 1229-2370.

61. A. Mellouk, S. Ziane, P. Lorenz, "A Swarm Quality of Service Based Multi-Path Routing Algorithm (SAMRA) for Wireless Ad Hoc Networks", International Review on Computers and Software (I.RE.CO.S.), Vol.1, No. 1, July 2006, pp. 11-19. ISSN 1828-6003.

62. M. Brahma, A. Abouaissa, P. Lorenz, A New Buffer and Energy Based Scheduling Scheme for Supporting QoS in MANETs, Journal of Communications Software and Systems (JCOMSS), Special issue on QoS in Wireless Networks, Volume 2, Number 2, June 2006, pp. 81-88. ISSN 1845-6421.

63. A. Jamalipour, P. Lorenz, "End-to-end QoS support for IP and multimedia traffic in heterogeneous mobile networks", Computer Communications, Elsevier Journal on Computer Communications, Special Issue on End-to-End QoS Provisioning Advances, volume 29, Issue 6, April 2006, pp. 671-682. ISSN: 0140-3664.

64. M. Brahma, K.W. Kim, A. Abouaissa, P. Lorenz, "A Load-Balancing and Push-out Scheme for Supporting QoS in MANETs", Telecommunication Systems, Kluwer Academic Publishers, Volume 30, Numbers 1-3, November 2005, pp. 161-175. ISSN 1018-4864.

65. D. Magoni, P. Lorenz, "Multicast State Distribution By Joins Using Multiple Shortest Paths", Journal of Interconnection Networks, Vol. 6, No. 2, June 2005, World Scientific Pub Co, Imperial College Press, pp. 115-130. ISSN: 0219-2659.

66. M. Elhachimi, A. Abouaissa, P. Lorenz, "Multicast Support in DiffServ using Mobile Agents", ETRI Journal, Volume 27, Number 1, February 2005, pp. 13-21. ISSN 1225-6463.

67. M. Elhachimi, A. Abouaissa, P. Lorenz, M. Lee, "Scalable Multicast Provisioning in DiffServ with MPLS Labeling", Telecommunication Systems, Kluwer Academic Publishers, Vol. 27, No 2,4, October/December 2004, pp. 253-272. ISSN 1018-4864.

68. M. Ries, O. Nemethova, M. Rupp, "Video Quality Estimation for Mobile H.264/AVC Video Streaming," in Journal of Communications, Vol. 3, pp. 41 - 50, 2008.

69. Tatiana Radulescu, Henri George Coanda "QoS in IP multimedia Network", Ed. Albastra, Cluj-Napoca, 2007, ISBN 978-973-650-219-4.

70. Jens Oberender, Frank-Uwe Andersen, Hermann de Meer, Ivan Dedinski, Tobias Hoßfeld, Cornelia Kappler, Andreas Mäder, Kurt Tutschku, "Enabling Mobile Peer-to-Peer Networking", Mobile and Wireless Systems, LNCS 3427, Dagstuhl, Germany, January 2005.

71. Thomas Bohnert, Dirk Staehle, Edmundo Monteiro, "Speech Quality Aware Resource Control for Fixed and MobileWiMAX", in "WiMAX Evolution, Emerging Technologies and Applications", Marcos Katz and Frank Fitzek (Eds.), John Wiley and Sons, to appear 2009.

72. Dirk Staehle and Andreas Mäder "Radio Resource Management Strategies for HSDPA-enhanced UMTS Networks" in "Wireless Multimedia: Quality of Service and Solutions", Nikki Cranley, Liam Murphy (Eds.), IGI Global, 2008.

73. Andreas Mäder and Dirk Staehle, "Radio Resource Management for the UMTS Enhanced Uplink in Presence of QoS Radio Bearers", Special Issue of Annals of Operation Research on Stochastic Performance Models for Resource Allocation, 196(1) , September 2008.

74. Marcel C. Castro, Andreas J. Kassler Carla-Fabiana Chiasserini, Claudio Casetti, and Ibrahim Korpeoglu: Peer-to-Peer Overlay in Mobile Ad-hoc Networks, in: Handbook of Peer-to-Peer Networking, Springer Verlag, 2008.

75. Packet Relaying in Multi-Hop Networks, Editor of Chapter 5.2, Traffic and QoS Management in Wireless Multimedia Networks, to be published 2009 by Springer, ISBN 978-0-387-85572-1.

76. Packet Aggregation for VoIP in Wireless Meshed Networks, Editor and Co-Author of Chapter 5.2.3, Traffic and QoS Management in Wireless Multimedia Networks, to be published 2009 by Springer, ISBN 978-0-387-85572-1.

77. Performance Comparison of Different TCP Flavours, Editor and Co-Author of Chapter 5.4.2 Traffic and QoS Management in Wireless Multimedia Networks, to be published 2009 by Springer, ISBN 978-0-387-85572-1.

78. Dynamic Multimedia Stream Adaptation and Rate Control for Heterogeneous Networks, Andrzej Szwabe, Andreas Schorr, Franz J. Hauck, Andreas J. Kassler, in: Journal of Zhejiang University, Vol. 7, Suppl I, pp. 63-69, May 2006.

79. End-to-End Quality of Service Coordination Models for Mobile Networks, A. Kassler, T. Guenkova-Luy, WSEAS Transactions on Computers, Nr. 5, Vol. 3, pp. 1412, Nov. 2004.

80. End-to-End Quality of Service Coordination for Mobile Multimedia Applications, A. Kassler, T. Guenkova-Luy, D. Mandato, in: IEEE Journal on Selected Areas in Communications, Special Issue: Advanced Mobility Management and QoS protocols for Wireless Internet, vol. 22, no. 5, Jun 2004 pp. 889-903.

81. L. Mamatas and V. Tsaoussidis, "Differentiating Services with Non-Congestive Queuing (NCQ)", IEEE Transactions on Computers, 2008.

82. L.Mamatas, V.Tsaoussidis "Effort/Gains Dynamics in Heterogeneous Networks", International Journal of Communications Systems (IJCS), Wiley Academics, Volume 21, Issue 4, Pages 361-382, 2008.

83. Ioannis Psaras, Vassilis Tsaoussidis "Why TCP Timers (still) Don't Work Well", Computer Networks (COMNET), Elsevier Science, Volume 51, Issue 8, pages 2033 - 2048, June 2007.

84. P. Papadimitriou and V. Tsaoussidis "On TCP Performance over Asymmetric Satellite Links with Real-Time Constraints", Computer Communications, Elsevier, Vol. 30, No. 7, May 2007, pp. 1451-1465.

85. Burkhard Stiller, David Hausheer, Jan Gerke, Peter Racz, Cristian Morariu, Martin Waldburger: Accounting and Charging - Guarantees and Contracts. Ubiquitous Computing Technology for Real Time Enterprises, Max Mühlhäuser, Iryna Gurevych (Eds.), ISBN 978-1-59904-832-1, Information Science Reference, pages 302-336, New York, U.S.A., December 2007.

Conferences

1. Y. Koucheryavy, S. Dass "Evaluation of Effect of Data Throughput Evolution on Mobile Station Performance", IEEE CCNC 2009, January 2009, Las Vegas, USA.

2. L. De Cicco, S. Mascolo, V. Palmisano "A Mathematical Model of the Skype VoIP Congestion Control Algorithm", to appear in IEEE Conference on Decision and Control 2008, Cancun, Mexico, Dec, 2008

3. A. Vinel, V. Vishnevsky, Y. Koucheryavy "A Simple Analytical Model for the Periodic Broadcasting in Vehicular Ad-hoc Networks", IEEE GLOBECOM 2008, 4th workshop on BWA, November 2008, New Orleans, USA. AR 28%

4. N. Bayer, M.C. de Castro, A. Kassler, Y. Koucheryavy, P. Mitoraj, D. Staehle "Performance Evaluation of VoIP Wireless Mesh Networks", IEEE ICCSC 2008, Beijing, China.

5. L. Correia, D. Tkachenko, Y. Koucheryavy, S. Bregni, N. Oaca; Global IEEE Communications Magazine Newsletter, IEEE Communications Magazine, vol.46, issue 5, May 2008, pp. 1 – 4.

6. L. De Cicco, S. Mascolo, V. Palmisano "Skype Video Responsiveness to Bandwidth Variations", NOSSDAV '08, Braunschweig, Germany, May, 2008

7. D. Moltchanov, R. Dunaytsev, Y. Koucheryavy "Cross-Layer Modeling of TCP SACK Performance over Wireless Channels with Completely Reliable ARQ/FEC", WWIC 2008.

8. L. De Cicco, S. Mascolo, V. Palmisano, "An Experimental Investigation of the End-to-End QoS of the Apple Darwin Streaming Server", Wired/Wireless Internet Communications (WWIC) 2008, Tampere, Finland, May, 2008

9. T. M. Bohnert, D. Staehle, G.S. Kuo, Y. Koucheryavy, E. Monteiro "Speech Quality Aware Admission Control for Fixed IEEE 802.16 Wireless MAN", IEEE ICC 2008. AR 36%

10. J. Jakubiak, Y. Koucheryavy "State of the Art and Research Challenges for VANETs", IEEE CCNC 2008, January 2008, Las Vegas, USA.

11. A. Stankevich, Y. Koucheryavy, A. Koucheryavy "On traffic forecasting and queue management using neural network with inputs logarithmic scaling and quantization", IEEE ISCIS 2007, Ankara, Turkey, November 2007.

12. T. M. Bohnert, Y. Koucheryavy, M. Katz, J. Jakubiak, E. Borcoci, E. Monteiro "On Evaluating a WiMAX Access Network for Isolated Research and Data Networks using NS-2", NEW2AN 2007, St.Petersburg, Russia, September 2007. AR 35%.

13. R. Dunaytsev, K. Avratchenkov, Y. Koucheryavy, J. Harju "An Analytical Comparison of the Slow-but-Steady and Impatient Variants of TCP NewReno", WWIC 2007, Coimbra, Portugal. AR 14%

14. T. M. Bohnert, E. Monteiro, M. Curado, A. Fonte, Y. Koucheryavy, D. Moltchanov, M. Ries "Internet Quality of Service: A Bigger Picture", OpenNet Workshop "Service Quality and IP Network Business: Filling the Gap", March 27 - 29, 2007, Brussels / Diegem, Belgium.

15. L. De Cicco, S. Mascolo and V. Palmisano "An Experimental Investigation of the Congestion Control Used by Skype VoIP", Wired/Wireless Internet Communications (WWIC) 2007, Coimbra, Portugal, May 2007.

16. L. De Cicco and S. Mascolo "TCP Congestion Control over 3G Communication Systems: an Experimental Evaluation of New Reno, BIC and Westwood+", in Proceedings of NEW2AN 2007, St. Petersburg, Russia, 2007.

17. G. Boggia, P. Camarda, A. d'Alconzo, L. Alfredo Grieco, S. Mascolo "Joint Cross-layer Power Control and FEC Design for TCP Westwood+ in Hybrid Wireless-Wired Networks", NTMS' 2007 New Technologies, Mobility and Security Conference., Paris, France, May, 2007.

18. G. Boggia, P. Camarda, L. Alfredo Grieco, S. Mascolo A. Stefanelli "Performance Evaluation of Feedback-based Bandwidth Allocation Algorithms for 802.11e MAC", IEEE VTC 2007, Dublin, Ireland, April, 2007

19. T. M. Bohnert, E. Monteiro, Y. Koucheryavy, D. Moltchanov "Non-Parametric and Self-Tuning Measurement-based Admission Control", IFIP Networking 2007, Atlanta, USA.

20. J. Jakubiak, Y. Koucheryavy "Precise delay analysis of IEEE legacy ad-hoc networking", VTC Spring 2007, Dublin, Ireland.

21. I. Alocci, G. Giambene, Y. Koucheryavy "Optimization of the Transport Layer Performance in a Wireless System based on the IEEE 802.11e Standard", IEEE ISWPC 2007.

22. Y. Koucheryavy, A. Vitchenko "Dynamic per-flow resource allocation mechanism for IPTV networks", ATNAC 2006, Melbourne, Australia, December 4 - 6, 2006.

23. D. Valerio, L. De Cicco, S.Mascolo, F. Vacirca, T.Ziegler Optimization of IEEE 802.11 parameters for wide area coverage MEDHOCNET 2006, Lipari, Italy, June 14-17, 2006.

24. Luca De Cicco, Saverio Mascolo "TCP versus TFRC over wired and wireless Internet scenarios: an experimenal evaluation", NEW2AN 2006, S. Petersburg, Russia, June 2006.

25. A.Baiocchi, S.Mascolo, F.Vacirca "TCP internal buffers optimization for fast long-distance links", INFOCOM '06 Workshop on High Speed Networking, Barcelona, Spain, 24-27, April 2006.

26. Saverio Mascolo, Francesco Vacirca "The effect of reverse traffic on TCP congestion control algorithms", Protocols for Fast Long-distance Networks, Nara, Japan, Feb. 2006.

27. Saverio Mascolo "Modeling the Internet congestion control using a Smith controller with input shaping", Control Engineering Practice, Volume 14, Issue 4, Pages 425-435, Elsevier., April 2006.

28. G. Boggia, P. Camrada, A. d'Alconzo, L. A. Grieco, S. Mascolo, E. Altman, C. Barakat "Modeling the AIADD Paradigm in Networks with Variable Delays", CONEXT 2006, CONFERENCE ON FUTURE NETWORKING TECHNOLOGIES, Lisboa,Portugal, December, 2006.

29. J. Jakubiak, D. Moltchanov, Y. Koucheryavy "Practical Performance Evaluation of IEEE WLAN Technologies for VANET Environment", EUNICE 2006, Stuttgart, Germany, September 2006.

30. R. Dunaytsev, Y. Koucheryavy, J. Harju, "TCP NewReno throughput in the presence of correlated losses: the Slow-but-Steady variant", IEEE INFOCOM 2006, Barcelona, Spain, April 2006.

31. Y. Koucheryavy, A. Vasiliev, S. Soloviev, A. Koucheryavy "The Public Packet-Switched Network with Guaranteed QoS Based on DiffServ Domain Hierarchy", in proc. of ICACT 2006, R. Korea, February 2006.

32. D. Moltchanov, Y. Koucheryavy, Harju J. "Non-preemptive D-BMAP/D/1/K queuing system modeling the frame transmission process over wireless channels", 19th ITC, 2005, Beijing, China.

33. D. Moltchanov, Y. Koucheryavy, J. Harju, "Accurate and Computationally Efficient Wireless Channel Modeling Algorithm", in proceedings of WWIC 2005, Xanthi, Greece.

34. R. Dunaytsev, Y. Koucheryavy, J. Harju, "Refined PFTK-model of TCP Reno throughput in the presence of correlated losses", WWIC 2005, Greece, May.

35. S. Mascolo, F. Vacirca "Congestion Control and Sizing Router Buffers in the Internet", IEEE Conference on Decision and Control, Sevilla, Spain, December 2005.

36. S. Mascolo, F. Vacirca "Issues in Performance Evaluation of Next TCP Stacks in High Speed Networks", 2005 International Symposium on Performance Evaluation of Computer and Telecommunication Systems (SPECTS'05), July 2005.

37. S. Mascolo, G. Racanelli "Testing TCP Westwood+ over Transatlantic Links at 10 Gigabit/second rate", Third International Workshop on Protocols for Fast Long-Distance Networks, Ecole Normale Superieure, Lyon, Fance, February 3,4 2005.

38. L. A. Grieco, S. Mascolo "Mathematical analysis of Westwood+ TCP congestion control", IEE Proceedings-Control Theory and applications, 152 (1): 35-42, Jan. 2005.

39. G. Boggia, P. Camarda, L. A. Gieco, Barbuzzi, S. Mascolo, "Real-time applications in 802.11 WLAN using feedback-based bandwidth allocation, 2005 Tyrrhenian International Workshop on Digital Communications, July, 2005.

40. G. Boggia, P. Camarda, F. A. Favia, L. A. Grieco, S. Mascolo "Providing Delay Guarantees and Power Saving in IEEE 802.11e Networks", 3rd International Conference on Wired/Wireless Internet Communications (WWIC'05), May, 2005.

41. G. Boggia, P. Camarda, L. A. Grieco, S. Mascolo, M. Nacci "Performance Evaluation of a Feedback Based Dynamic Scheduler for 802.11e MAC", 3rd International Workshop on QoS in Multiservice IP Networks (QoSIP'05) , February, 2005.

42. L. A. Grieco, S. Mascolo "Congestion control for the Internet planetary paths", 16th International Federation Automatic Control (IFAC), World Congress, July 4 - 8, 2005.

43. R. Dunaytsev, Y. Koucheryavy, J. Harju "The impact of RTT and delayed ACK timeout ratio on the initial slow start phase", in proc. of IPS-MoMe Poland, March, 2005.

44. D. Moltchanov, Y. Koucheryavy, J. Harju, "Cross-layer performance evaluation of IP-based applications running over the air interface", Net-Con IFIP TC6, November 2 – 5, 2004, Palma de Mallorca, Spain.

45. D. Moltchanov, Y. Koucheryavy, J. Harju, "Cross-layer analytical modeling of wireless channels for accurate performance evaluation", QofIS 2004, September 31 – October 01, 2004, Barcelona, Spain.

46. D. Moltchanov, Y. Koucheryavy, J. Harju, "Approximate queuing model for performance evaluation of users' applications running over the wireless channels", 16th ITC Specialists Seminar on Performance Evaluation of

Wireless and Mobile Systems, August 31 – September 2, 2004, Antwerp, Belgium.

47. D. Moltchanov, Y. Koucheryavy, J. Harju, "Composite Model of Packetized VBR Source for Next Generation All-IP Mobile Networks", International Symposium on Performance Evaluation of Computer and Telecommunication Systems, SPECTS 2004, July 25 – 29, San Jose, California, USA.

48. A. Krendzel, Y. Koucheryavy, J. Harju, "Method for estimating parameters of 3G data traffic", the IEEE International Conference on Communications, ICC, June 20 – 24, 2004, Paris, France. AR 29%.

49. D. Moltchanov., Y. Koucheryavy, J. Harju, "Accurate performance evaluation of IP-based applications running over the wireless channel", 17th Nordic Teletraffic Seminar, NTS, August 25–27, 2004, Fornebu, Norway.

50. R. Dunaytsev, A. Krendzel, Y. Koucheryavy, J. Harju "Estimation of Web traffic generated by users in home networks", the 8th IASTED Internet and Multimedia Systems and Applications, IMSA 2004, August 16 – 18, Kauai, Hawaii, USA.

51. Y. Koucheryavy, D. Moltchanov, J. Harju, G. Giambene "Teletraffic requirements and system aspects for future mobile communications", the 8th IASTED Internet and Multimedia Systems and Applications, IMSA 2004, August 16 – 18, Kauai, Hawaii, USA.

52. L. A. Grieco, S. Mascolo "Performance evaluation and comparison of Westwood+", New Reno and Vegas TCP congestion control ACM Computer Communication Review, Volume 34, Issue 2, Apr. 2004.

53. A. Dell'Aera, L. A. Grieco and S. Mascolo "Linux 2.4 Implementation of Westwood+ TCP with rate-halving: A Performance Evaluation over the Internet", IEEE International conference on Communication (ICC 2004), Paris, June 2004.

54. D. Cavendish, S. Mascolo, M. Gerla "A Control Theoretical Approach to Congestion Control in Packet Networks", IEEE/ACM Transactions on Networking, Volume 12, Issue 5, pp. 893 - 906, October 2004.

55. S. Mascolo, L.A. Grieco, E. di Sciascio "ETERCA: An End-to-end Rate Control Algorithm for Packet Switching Networks", Journal of High Speed Networks, IOS Press, The Netherlands, Volume 13, Issue 2, March 2004.

56. A. Annese, G. Boggia, P. Camarda, L.A. Greico, S. Mascolo, "A HCF-based bandwidth allocation algorithm for 802.11e MAC", IEEE Vehicular Technology Conference 2004, May 17 - 19, 2004.

57. G. Boggia, P. Camarda, L. A. Greico, T. Larocca, S. Mascolo "A Call Admission Control with Dynamic Bandwidth Allocation for providing delay guarantees in IEEE 802.11e Networks", 7th International Symposium on Wireless Personal Multimedia Communications, September 12 - 15 , 2004.

58. G. Boggia, P. Camarda, M. Castellano, O. Fiume, L. A. Greico, S. Mascolo "A collision free MAC protocol for energy saving in wireless ad hoc networks", International Workshop on Wireless Ad-hoc Networks, May, 2004.

59. L. A. Grieco, S. Mascolo "Efficiency, fairness and friendliness evaluation of TFRC and ARC", IEEE and Eurasip First International Symposium on Control, Communications and Signal Processing. , March 21 - 24, 2004.

60. M. Di Bernardo, L. A. Grieco, S. Manfredi, S. Mascolo "Design of robust AQM controllers for improved TCP Westwood congestion control", 16th International Symposium on Mathematical, Theory of Networks and Systems, June, 2004.

61. S. Mascolo, L.A. Grieco "TCP for Deep Space Communications Paths Tracking", Telemetry and Command Systems for Space Applications (TTC 2004). European Space Agency, September 7 – 9, 2004.

62. S.Mascolo "Modeling and Designing the Internet Congestion control In: S. Tarbouriech, C.T. Abdallah, J. Chiasson "Advances in Communication Control Networks" (vol. LNCIS 308, pp. 137-158). ISBN: 3-540-22819-5. Lectures Notes in Control and Information Sciences, Springer, 2004.

63. Bargh, M.S. and Hulsebosch, B. and Eertink, E.H. and Heijenk, G.J. and Idserda, J. and Laganier, J. and Prasad, A.R. and Zugenmaier, A. (2008) Reducing handover latency in future IP-based wireless networks: Proxy Mobile IPv6 with simultaneous bindings. In: 9th International Symposium on a World of Wireless, Mobile and Multimedia Networks (WoWMoM), 23-26 Jun 2008, Newport Beach / Irvine, USA. IEEE. ISBN 978-1-4244-2100-8.

64. Dimitrova, D.C. and van den Berg, J.L. and Litjens, R. and Heijenk, G.J. (2008) Flow Level Performance Comparison of Packet Scheduling Schemes for UMTS EUL. In: Proceedings of the 6th International Conference on Wired/Wireless Internet Communications, 28-30 May 2008, Tampere, Finland. pp. 27-40. Lecture Notes in Computer Science LNCS 5031. Springer Verlag. ISSN 0302-9743 ISBN 978-3-540-68805-1.

65. Dimitrova, D.C. and Heijenk, G.J. and van den Berg, J.L. and Litjens, R. (2008) Impact of inter-cell interference on flow level performance of scheduling schemes for the UMTS EUL. In: Proceedings of the 4thIEEE International Conference on Wireless and Mobile Computing, Networking and Communications, WiMob 2008, 12-14 Oct 2008, Avignon, France. IEEE.

66. Heijenk, G.J. and Bargh, M.S. and Laganier, J. and Prasad, A.R. (2008) Reducing handover latency in future IP-based wireless networks: Fast Proxy Mobile IPv6. In: Second ERCIM workshop on eMobility, 30 May 2008, Tampere, Finland. pp. 79-92. Tampere University of Technology. ISBN 978-952-15-1972-7.

67. Liu, F. and Heijenk, G.J. (2008) Dynamic connectivity analysis of ABF-based ad-hoc networks. In: Proceedings of the 1st IFIP Wireless and Mobile Networking Conference, 30 Sep -02 Oct 2008, Toulouse, France. Springer Verlag.

68. Remke, A.K.I. and Haverkort, B.R.H.M. and Heijenk, G.J. and Cloth, L. (2008) Bottleneck Analysis for Two-Hop IEEE 802.11e Ad Hoc Networks. In: Analytical and Stochastic Modeling Techniques and Application, 04-06 Jun 2008, Nicosia, Cyprus. pp. 279-294. Lecture Notes in Computer Science 5055. Springer. ISSN 0302-9743 ISBN 978-3-540-68980-5.

69. Yang, Y. and Haverkort, B.R.H.M. and Heijenk, G.J. (2008) A control-theoretic modeling approach for service differentiation in multi-hop ad-hoc networks. In: Proceedings of the Fifth International Conference on the Quantitative Evaluation of Systems, QEST 2008), 14-17 Sep 2008, St Malo, France. IEEE Computer Society Press.

70. Goering, P.T.H. and Heijenk, G.J. and Haverkort, B.R.H.M. and Haarman, R. (2007). The effect of mobility on local service discovery in the Ahoy ad-hoc network system. In: Proceedings of the European Performance Engineering Workshop, EPEW 2007, 27 - 28 Sept 2007, Berlin, Germany. pp. 284-300. Lecture Notes in Computer Science 4748. Springer Verlag. ISBN 978-3-540-75210-3.

71. Liu, F. and Goering, P.T.H. and Heijenk, G.J. (2007) Modeling service discovery in ad-hoc networks. In: Proceedings of the Fourth ACM International Workshop on Performance Evaluation of Wireless Ad Hoc, Sensor, and Ubiquitous Networks, PE-WASUN 2007, 22 - 26 Oct 2007, Chania, Greece. pp. 9-16. Association for Computing Machinery. ISBN 978-1-59593-808-4.

72. Yang, Y. and Haverkort, B.R.H.M. and Heijenk, G.J. (2007) A centralized feedback control model for resource management in wireless networks. In: Proceedings of the The Eighth International Workshop on Performability Modeling of Computer and Communication Systems (PMCCS-8), 20 - 21 Sept 2007, Edinburgh, Scotland. pp. 10-16. CTIT Workshop Proceedings. Centre for Telematics and Information Technology, University of Twente. ISSN 1574-0846 2006.

73. Coenen, T.J.M. and Goering, P.T.H. and Jehangir, A. and van den Berg, J.L. and Boucherie, R.J. and Heemstra de Groot, S.M. and Heijenk, G.J. and Dhillon, S.S. and Lu, W. and Lo, A. and van Mieghem, P.F.A. and Niemegeers, I.G.M.M. (2006) Architectural and QoS aspects of Personal Networks. In: Proceedings of First International Workshop on Personalized Networks, PerNets 2006, 21 July 2006, San Jose, CA, USA. IEEE. ISBN 0-7803-9792-4.

74. El Allali, H. and Heijenk, G.J. and Lo, A. and Niemegeers, I.G.M.M. (2006) A measurement-based admission control algorithm for resource management in diffserv IP networks. In: Proceedings 17th Annual IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC'06), 11-14 September 2006, Helsinki, Finland. pp. 1-5. IEEE Computer Society Press. ISBN 1-4244-0330-8.

75. Goering, P.T.H. and Heijenk, G.J. (2006) Service discovery using Bloom filters. In: Proceedings of the twelfth annual conference of the Advanced School for Computing and Imaging, June 14-16, 2006, Lommel, Belgium. pp.

219-227. Advanced School for Computing and Imaging (ASCI). ISBN 90-810849-1-7.

76. Liu, F. and Heijenk, G.J. (2006) Context discovery using attenuated Bloom filters in ad-hoc networks. In: Proceedings 4th International Conference on Wired/Wireless Internet Communications, WWIC 2006, May 9-12, 2006, Bern, Switzerland. pp. 13-25. Lecture Notes in Computer Science 3970. Springer-Verlag. ISSN 0302-9743 ISBN 3-540-34023-8 2005.

77. Bader, A. and Karagiannis, G. and Westberg, L. and Kappler, C. and Phelan, T. and Tschofenig, H. and Heijenk, G.J. (2005) QoS signaling across heterogeneous wired/wireless networks: resource management in diffserv using the NSIS protocol suite. In: Proceedings Second International Conference on Quality of Service in Heterogeneous Wired/Wireless Networks, QSine 2005, 22 - 24 Aug 2005, Orlando, Florida, USA. 51. IEEE Computer Society. ISBN 0-7695-2423-0.

78. Heijenk, G.J. and Liu, F. (2005) Interference-based routing in multi-hop wireless infrastructures. In: Proceedings Wired/Wireless Internet Communications: Third International Conference, WWIC 2005, 11 - 13 May 2005, Xanthi, Greece. pp. 117-127. Lecture Notes in Computer Science 3510 / 2005. Springer-Verlag. ISSN 0302-9743 ISBN 3-540-25899-X.

79. Lo, A. and Heijenk, G.J. and Niemegeers, I.G.M.M. (2005) Performance evaluation of MPEG-4 video streaming over UMTS networks using an integrated tool environment. In: Proceedings 2005 International Symposium on Performance Evaluation of Computer and Telecommunication Systems, SPECTS 2005, 24 - 28 July 2005, Philadelphia, PA, USA. pp. 676-682. The Society for Modeling & Simulation International (SCS). ISBN 1-56555-300-4.

80. Lo, A. and Heijenk, G.J. and Niemegeers, I.G.M.M. (2005) Evaluation of MPEG-4 video streaming over UMTS/WCDMA dedicated channels. In: Proceedings First International Conference on Wireless Internet, WICON'05, 10 - 15 July 2005, Budapest, Hungary. pp. 182-189. IEEE Computer Society. ISBN 0-7695-2382-X.

81. F.J. Velez and Rui R. Paulo, "High Capacity Wideband Traffic in Enhanced UMTS: a Step Towards 4G", in Proc. of 3G 2004 - 5th IEE International Conference on 3G Mobile Communication Technologies, London, UK, Oct. 2004.

82. J. Ferreira and F.J.Velez, "Deployment Scenarios and Applications Characterisation for Enhanced UMTS Simulation", in Proc. of 3G 2004 - 5th IEE International Conference on 3G Mobile Communication Technologies, London, UK, Oct. 2004 (Best Paper Prize).

83. Jaime Ferreira and Fernando J. Velez, "Source Traffic Modelling for Enhanced UMTS Simulation," in Proc. of ConfTele' 2005 – 5th Conference on Telecommunications, Tomar, Portugal, Apr. 2005.

84. Cátia Franco, Ricardo Rei and Fernando J. Velez, "Cost/Revenue Optimisation of Enhanced UMTS Cellular Planning in Urban Scenarios," in

Proc. of IEEE SCVT' 2005 - 12th Annual Symposium on Communications and Vehicular Technology in the Benelux, Enschede, Netherlands, Nov. 2005.

85. Fernando J. Velez, Vitor Carvalho, Dany Santos, Rui P. Marcos, Rui Costa, Pedro Sebastião and António Rodrigues, "Planning of an IEEE 802.16e Network for Emergency and Safety Services," in Proc. of 3G 2005 - 6th IEE International Conference on 3G Mobile Communication Technologies, London, UK, Oct. 2005.

86. Fernando J. Velez, Vitor Carvalho, Dany Santos, Rui P. Marcos, Rui Costa, Pedro Sebastião and António Rodrigues, "Aspects of Cellular Planning for Emergency and Safety Services in Mobile WiMax Networks," in Proc. of ISWPC' 2006 - 1st International Symposium on Wireless Pervasive Computing 2006, Phuket, Thailand, Jan. 2006.

87. Jesús M. Juárez Valero, Rui R. Paulo and Fernando J. Velez, "Tele-Traffic Simulation for Mobile Communication Systems Beyond 3G," in Proc. of AICT' 06 - The 2nd Advanced International Conference on Telecommunications, Guadeloupe, French Caribbean, Feb. 2006.

88. Cátia Franco, Ricardo Rei, Orlando Cabral, Fernando J. Velez, "Optimisation of Enhanced UMTS Cellular Planning Based in Economic Aspects," in Proc. of WTS 2006 – Wireless Telecommunications Symposium, Cal Poly Pomona, CA, USA, Apr. 2006.

89. Orlando Cabral, Fernando J. Velez, Cátia Franco, Ricardo Rei, "Urban Cellular Planning Optimisation of Multi-service Enhanced UMTS Based in Economic Issues," in Proc. of WWIC' 2006 – 4th International Conference on Wired/Wireless Internet Communications, Bern, Switzerland, May 2006, pp.178-189.

90. Cátia Franco, Ricardo Rei, F.J. Velez, "Enhanced UMTS Micro-Celular Multi-Service Planning Optimisation in Business City Centres," in Proc. of ICT 2006 - 13th International Conference on Telecommunications, Funchal, Madeira island, Portugal, May 2006.

91. Orlando Cabral, F.J. Velez, Cátia Franco, Ricardo Rei, "Enhanced UMTS Simulation-based Cellular Planning in Urban Scenarios," in Proc. of ICT 2006 - 13th International Conference on Telecommunications, Funchal, Madeira island, Portugal, May 2006.

92. F.J. Velez, Vitor Carvalho, Dany Santos, Rui P. Marcos, Rui Costa, Pedro Sebastião, Ricardo Tomé, António Rodrigues, "Cellular Planning of an IEEE 802.16 Wireless Metropolitan Area Network," in Proc. of ICT 2006 - 13th International Conference on Telecommunications, Funchal, Madeira island, Portugal, May 2006.

93. Jesús M. Juárez, Rui R. Paulo, Eva Reguera San José, Fernando J. Velez, "MODELLING OF MULTI-RATE MULTI-SERVICE TRAFFICIN THE PRESENCE OF MOBILITY," in Proc. of MPTP-3rd International Workshop on Mathematical Techniques and Problems in Telecommunications, Leiria, Portugal, Sep. 2006.

94. Jesús M. Juárez, Rui R. Paulo, Eva Reguera San José, Fernando J. Velez, "Modelling and Simulation of Multi-rate Multi-service Traffic in the Presence of Mobility," in Proc. of IEEE VTC2006-Fall - IEEE Semi Annual Vehicular Technology Conference, Montreal, Canada, Sep. 2006.

95. Fernando J. Velez, Nuno Anastácio, Francisco Merca, Orlando Cabral, "Cost/Revenue Optimisation of Multi-service Cellular Planning for City Centre E-UMTS", in Proc. of IEEE VTC2007-Spring - IEEE Semi Annual Vehicular Technology Conference, Dublin, Ireland, Apr. 2007.

96. Jesús M. Juárez, Rui R. Paulo, Fernando J. Velez, "Event-based Simulation for Multi-rate Multi-service Traffic Validation in B3G Systems", in Proc. of IEEE VTC2007-Spring - IEEE Semi Annual Vehicular Technology Conference, Dublin, Ireland, Apr. 2007.

97. Marco Marques, João Ambrósio, Carlos Reis, David Gouveia, Daniel Robalo, Fernando J. Velez, Rui Costa, José Riscado, "Design and Implementation of IEEE 802.16 Radio Links with Relays", in Proc. of Conftele' 2007 – 6th Conference on Telecommunications, Peniche, Portugal, May 2007.

98. Jesús M. Juárez Valero, Rui R. Paulo, Fernando J. Velez, "Event-based Tele-Traffic Simulation of Mobile Communication Systems Beyond 3G", in Proc. of Conftele' 2007 – 6th Conference on Telecommunications, Peniche, Portugal, May 2007.

99. Pedro Sebastião, Fernando Velez, Ricardo Tomé, Rui Costa, Daniel Robalo, António Grilo, António Rodrigues, Francisco Cercas, "User capacity based planning tool for Wi-Fi and WiMAX networks," in Proc. of the First WEIRD Workshop on WiMAX, Wireless and Mobility – held in conjunction with WWIC 2007 – 5th International Conference on Wired/Wireless Internet Communications, Coimbra, Portugal, May 2007.

100. Orlando Cabral, Alberto Segarra, Fernando J. Velez, "Simulation of IEEE 802.11e in the context of interoperability," in Proc. of ICWN´ 2007 - The 2007 International Conference of Wireless Networks (held in the context of WCE´ 2007 - World Congress on Engineering), London, U.K., July 2007.

101. Marco Marques, João Ambrósio, Carlos Reis, David Gouveia, Daniel Robalo, Fernando J. Velez, Rui Costa, José Riscado, "Design and Planning of IEEE 802.16 Networks", in Proc. of PIMRC 2007 – 18th IEEE International Symposium on Personal, Indoor and Mobile Radio Communications, Athens, Greece, September 2007.

102. Valdemar Monteiro, Orlando Cabral, Jonathan Rodriguez, F. J. Velez, A. Gameiro, "HSDPA/WiFi RAT Selection Based on Load Suitability," in Proc. of 17th ICT Mobile & Wireless Communications Summit (IST SUMMIT 2007), Stockholm, Sweden, Jun. 2008.

103. Fernando J. Velez, Rui Costa, Daniel Robalo, Marco Marques, Cláudio Comissário, José Riscado, Victor Cavaleiro, Pedro Sebastião, António Rodrigues, "Design and Installation of Pre-WiMAX Radio Links and Relays," in Proc. of WPMC 2008 - The 11th International Symposium on Wireless Personal Multimedia Communications, Lapland, Finland, Sep. 2008.

104.   Jesús M. Juárez Valero, Rui R. Paulo and Fernando J. Velez, "Tele-Traffic Simulation for Mobile Communication Systems Beyond 3G," Actas da Engenharia'2005 - Inovação e Desenvolvimento, Covilhã, Portugal, Nov. 2005.

105.   Orlando Cabral, Fernando J. Velez, George Hadjipollas, Marinos Stylianou, Josephina Antoniou, Vasos Vassiliou and Andreas Pitsillides, "Enhanced UMTS Simulation-based Planning in Office Scenarios," Actas da Engenharia'2005 - Inovação e Desenvolvimento, Covilhã, Portugal, Nov. 2005.

106.   Fernando Velez, Orlando Cabral, Valdemar Monteiro, Jonathan Rodriguez, Alberto Nascimento, Atílio Gameiro, Joel Rodrigues, "Highlights from the Workshop Pervasive Broadband Wireless Access — Toward Long-Term Evolution," IEEE Communications Magazine (Global Newsletter), Vol. 46, No. 9, Sep. 2008.

107.   Landmark, Lars; Øvsthus, Knut; Kure, Øivind. Alternative Packet Forwarding For Otherwise Discarded Packets. IEEE Computer Society 2007 (ISBN 978-0-7695-3048-2) 8 s.

108.   Moseng, Tor K.; Kure, Øivind. DiffServ in Ad Hoc Networks. Lecture Notes in Computer Science 2007 s. 113-125.

109.   Moseng, Tor K.; Kure, Øivind "QoS Architecture in Ad Hoc Networks", I: Proceedings from International Conference on Communications and Networking in China (ChinaCom 2007). IEEE conference proceedings 2007 ISBN 1-4244-1009-6.

110.   Pham, Vinh Quang; Larsen, Erlend; Øvsthus, Knut; Engelstad, Paal E.; Kure, Øivind "Rerouting Time and Queueing in Proactive Ad Hoc Networks" IEEE International Performance, Computing, and Communications Conference, 2007. IPCCC 2007.

111.   Hauge, Mariann; Kure, Øivind. A Heterogeneous Cellular and Ad Hoc Network Architecture for Multipoint Streaming: A detailed performance analysis. I: Proceedings of the Third International Conference on Mobile Computing and Ubiquitous Networking (ICMU 2006). Japan: Information Processing Society of Japan 2006 ISBN 4-902523-09-4.

112.   Hauge, Mariann; Kure, Øivind. A Heterogeneous Cellular and Ad Hoc Network Architecture for Multipoint Streaming: A detailed performance analysis. The Third International Conference on Mobile Computing and Ubiquitous Networking (ICMU 2006).

113.   Hauge, Mariann; Kure, Øivind. Evaluation of Packet-level FEC with Multicast Streaming for a Heterogeneous 3G-Cellular and Ad Hoc Network. I: Proceedings of the 2nd International Mobile Multimedia Communications Conference (MobiMedia 20069. Association for Computing Machinery (ACM) 2006 ISBN 1-59593-533-9.

114.   Hegland, Anne Marie; Spilling, Pål; Nilsen, Leif; Kure, Øivind. Hybrid Protection of OLSR. Electronical Notes in Theoretical Computer Science 2006.

115.   Korsnes, Reinert; Øvsthus, Knut; Li, Frank Yong; Landmark, Lars; Kure, Øivind "Link Lifetime Prediction for Optimal Routing in Mobile ad hoc Networks", I: IEEE Milcom 2005. : ISBN 0-7803-9394-5.

116.   Landmark, Lars; Kure, Øivind; Ovsthus, Knut "Performance analyze of the AODV Ad hoc Routing Protocol in a Dual Radio Network". 1-st ACM Workshop on Wireless Multimedia Networking and Performance Modeling (WMuNeP 2005).

117.   Winjum, E; Hegland, AM; Kure, Øivind; Spilling, P. Replay attacks in mobile wireless ad hoc networks: Protecting the OLSR protocol. Lecture Notes in Computer Science 2005; Volume 3421.

118.   Winjum, Eli; Hegland, Anne Marie; Spilling, Pål; Kure, Øivind. A Performance Evaluation Of Security Schemes Proposed for the OLSR Protocol. IEEE Military Communications Conference 2005 (MILCOM 2005).

119.   Winjum, Eli; Spilling, Pål; Kure, Øivind. On Adaptation to an Expanding Number of Nodes in Mobile Wireless Ad Hoc Networks. I: Proceedings, 2nd IEEE International Workshop on Adaptive Wireless Networks 2005 (AWiN 2005) in conjunction with IEEE Global Telecommunications Conference (Globecom). St. Louis, Missouri, USA).

120.   Winjum, Eli; Spilling, Pål; Kure, Øivind. Trust Metric Routing to Regulate Routing Cooperation in Mobile Wireless Ad Hoc Networks. I: Proceedings, 11th European Wireless 2005 (EW 2005). Nicosia, Cyprus.

121.   Hauge, Mariann; Hafslund, A; Li, F. Yong; Kure, Øivind. Multicast-Service Distribution on a Cellular Network Assisted by Local Ad Hoc Networks. Med-Hoc-Net.

122.   Hauge, Mariann; Kure, Øivind. Multicast Service Availability in a Hybrid 3G-Cellular and Ad Hoc Network. IWWAN 04.

123.   Li, F. Yong; Hauge, Mariann; Hafslund, A; Kure, Øivind; Spilling, Pål "Estimating Residual Bandwidth in 802.11-based Ad Hoc Networks: An Empirical Approach", The 7th Int. Symposium on Wireless Personal Multimedia Communications.

124.   Winjum, Eli; Kure, Øivind; Spilling, Pål "Trust Metric Routing Policies to Regulate Routing Cooperation in Mobile Wireless Ad hoc Networks". World Wireless Congress.

125.   Giovanni Giambene, Samuele Giannetti, "Cross-Layer Design and Dynamic Optimization for Wireless Systems", Royal Irish Academy Colloquium on "Emerging Trends in Wireless Communications", 23-24 April 2008, Dublin, Ireland.

126.   A. Hernández, M. Álvarez-Campana, Enrique Vázquez, V. Olmedo, " The IP Multimedia Subsystem (IMS). Quality of service and performance simulation", 14th HP Software University Association 2007 Workshop (HP-SUA 2007), Garching/Munich (Germany), July 8-11, 2007.

127.   A.B. García, M. Alvarez-Campana, E. Vázquez, G. Guénon, J. Berrocal, "ATM Transport between UMTS Base Stations and Controllers: Supporting Topology and Dimensioning Decisions", 15th IEEE International Symposium on Personal, Indoor and Mobile Radio Communications, PIMRC 2004, Barcelona, September 2004. ISBN 0-7803-8523-3.

128.   Attila Weyland, Thomas Staub, Torsten Braun: Liveliness Evaluation of a Cooperation and Accounting Strategy in Hybrid Networks, 4th Workshop on Applications and Services in Wireless Networks (ASWN 2004), Boston, MA, USA, August 8 - 11, 2004.

129.   Thiemo Voigt, Adam Dunkels, Torsten Braun: On-demand Construction of Non-interfering Multiple Paths in Wireless Sensor Networks, 2nd Workshop on Sensor Networks at Informatik 2005, 35. Jahrestagung der Gesellschaft für Informatik , Bonn, Germany, September 21, 2005, pp. 150-154, GI LNI, ISBN 3-88579-397-0.

130.   Marc Heissenbüttel, Torsten Braun, Tobias Roth, Thomas Bernoulli: GNU/Linux Implementation of a Position-based Routing Protocol, IEEE ICPS Workshop on Multi-hop Ad hoc Networks: from theory to reality (REALMAN 2005) , Santorini, Greece, July 14, 2005, pp. 25-33, ISBN 960-531-179-8.

131.   Marc Heissenbüttel, Torsten Braun, David Jörg, Thomas Huber: A Framework for Routing in Large Ad-hoc Networks with Irregular Topologies, Fourth Annual Mediterranean Ad Hoc Networking Workshop (Med-Hoc-Net 2005) , Ile de Porquerolles, France, June 21 - 24, 2005, pp. 119-128, Springer Boston, ISSN 0-387-31171-8.

132.   Marc Danzeisen, Torsten Braun, Isabel Steiner, Daniel Rodellar: On the Benefits of Heterogeneous Networking and How Cellular Mobile Operators Can Help, International Conference on Parallel Processing Workshop (IEEE WSNET 2005) , Oslo, Norway, June 14 - 17, 2005, pp. 366-371, ISBN 0-7695-2381-1.

133.   Attila Weyland, Thomas Staub, Torsten Braun: Comparison of Incentive-based Cooperation Strategies for Hybrid Networks, 3rd International Conference on Wired/Wireless Internet Communications (WWIC 2005), Xanthi, Greece, May 11 - 13, 2005, pp. 169-180, ISBN 3-540-25899-X.

134.   Torsten Braun, Laura Marie Feeney: Power Saving in Wireless Ad hoc Networks Without Synchronization, 5th Scandinavian Workshop on Wireless Ad-hoc Networks (ADHOC'05) , Stockholm, Sweden, May 3 - 4, 2005.

135.   Marc Heissenbüttel, Torsten Braun, Thomas Huber, David Jörg: Routing in Large Wireless Multihop Networks with Irregular Topologies, 5th Scandinavian Workshop on Wireless Ad-hoc Networks (ADHOC'05) , Stockholm, Sweden, May 3 - 4, 2005.

136.   Torsten Braun, Thiemo Voigt, Adam Dunkels: Energy-Efficient TCP Operation in Wireless Sensor Networks, Praxis der Informationsverarbeitung und Kommunikation (PIK), special issue on Wireless Sensor Networks, Nr. 2, April, 2005, 93-100, ISSN 0930-5157.

137.   Marc Danzeisen, Torsten Braun, Simon Winiker, Daniel Rodellar: Implementation of a cellular framework for Spontaneous Network Establishment, IEEE Wireless Communications and Networking Conference (WCNC) , New Orleans, USA, March 13 - 17, 2005, ISBN 0-7803-8967-0.

138.   Ruy de Oliveira, Torsten Braun: A Dynamic Adaptive Acknowledgment Strategy for TCP over Multihop Wireless Networks, IEEE Infocom 2005 (INFOCOM), Miami, USA, March 13 - 17, 2005, ISBN 0-7803-8969-7.

139.   Marcin Michalak, Torsten Braun: Common Gateway Architecture for Mobile Ad-hoc Networks, Wireless On demand Network Systems and Services (WONSS), St. Moritz, Switzerland, January 19 - 21, 2005, pp. 70-75, ISBN 0-7695-2292-0.

140.   Torsten Braun, Hahnsang Kim: Efficient Authentication and Authorization of Mobile Users Based on Peer-to-Peer Network Mechanisms, Quality of Service in Mobile and Wireless Networks as a minitrack of Hicss conference (HICSS) , Big Island, Hawaii, USA, January 3 - 6, 2005, pp. 306b, ISSN 1530-1605.

141.   Attila Weyland, Carolin Latze, Torsten Braun, Thomas Staub: Linux Implementation and Evaluation of a Cooperation Mechanism for Hybrid Wireless Networks, Sixth International Workshop on Wireless Local Networks (WLN) , Tampa, FL, USA, November 14, 2006, pp. 939-946, IEEE, ISBN 1-4244-0419-3.

142.   Markus Wälchli, Torsten Braun: Receiver-based CDS Algorithm for Wireless Networks, 5. GI/ITG KuVS Fachgespräch Drahtlose Sensornetze , Stuttgart, Germany, July 17 - 18, 2006, pp. 69-73.

143.   Markus Wälchli, Samuel Bissig, Torsten Braun: Intensity-based Object Localization and Tracking with Wireless Sensors, ACM Workshop on Real-World Wireless Sensor Networks (REALWSN'06), Uppsala, Sweden, June 19, 2006, pp. 61-65, ACM Press, ISBN 1-59593-431-6.

144.   Thomas Staub, Thomas Bernoulli, Markus Anwander, Markus Wälchli, Torsten Braun: Experimental Lifetime Evaluation for MAC Protocols on Real Sensor Hardware, ACM Workshop on Real-World Wireless Sensor Networks (REALWSN'06), Uppsala, Sweden, June 19, 2006, pp. 25-29, ACM Press, ISBN 1-59593-431-6.

145.   Thomas Spreng, Torsten Braun, Marc Steinemann, Attila Weyland: Implementation of an Authentication and Authorization Architecture for Mobile Internet Users, 6th International Workshop on Applications and Services in Wireless Networks (ASWN'06) , Berlin, Germany, May 29 - 31, 2006, pp. 207-213, ISBN 3-8167-7111-4.

146.   Marc Danzeisen, Torsten Braun, Isabel Steiner, Marc Heissenbüttel: On the Potential of Heterogeneous Networks, 4th International Conference on Wired/Wireless Internet Communications, Bern, Switzerland, May 10 - 12, 2006, pp. 84-95, Springer LNCS 3970, ISBN 3-540-34023-8.

147.   Philipp Hurni, Torsten Braun, Laura Maria Feeney: Simulation and Evaluation of Unsynchronized Power Saving Mechanisms in Wireless Sensor Networks, 4th International Conference on Wired/Wireless Internet Communications, Bern, Switzerland, May 10 - 12, 2006, pp. 311-324, Springer LNCS 3970, ISBN 3-540-34023-8.

148.   Marc Heissenbüttel, Torsten Braun, Markus Wälchli, Thomas Bernoulli: Optimized Stateless Broadcasting in Wireless Multi-hop Networks, IEEE Infocom , Barcelona, Spain, March 23 - 29, 2006, IEEE, ISBN 1-4244-0222-0.

149.   Marc Danzeisen, Torsten Braun, Daniel Rodellar, Simon Winiker: Heterogeneous Communications Enabled by Cellular Operators, IEEE Vehicular Technology Magazine, Vol. 1, Nr. 1, March, 2006, pp. 23-30, IEEE, ISSN 1556-6072.

150.   Markus Wälchli, Matthias Scheidegger, Torsten Braun: Intensity-based Event Localization in Wireless Sensor Networks, Third Annual Conference on Wireless On demand Network Systems and Services (WONS) , Les Ménuires, France, January 18 - 20, 2006, pp. 41-49.

151.   Marc Danzeisen, Torsten Braun, Marc Heissenbüttel, Isabel Steiner: Simulations on Heterogeneous Networking with CAHN, IEEE CCNC06, Las Vegas, USA, January 8 - 10, 2006, pp. 923-927, IEEE, ISBN 1-4244-0085-6.

152.   Markus Anwander, Gerald Wagenknecht, Thomas Staub, Torsten Braun: Management of Heterogenous Wireless Sensor Networks, 6. Fachgespräch , Aachen, Germany, July 16 - 17, 2007, pp. 63-66, Distributed Systems Group, RWTH Aachen University, ISSN 0935-3232.

153.   Torsten Braun: First ERCIM Workshop on eMobility, Ercim News , Nr. 70, July, 2007, pp. 6-7, ERCIM EEIG, ISSN 0926-4981

         Marc Heissenbüttel, Torsten Braun, Markus Wälchli, Thomas Bernoulli: Evaluating the limitations of and alternatives in beaconing, Ad Hoc Networks , Vol. 5, Nr. 5, July, 2007, pp. 558-578, Elsevier, ISSN 1570-8705.

154.   Torsten Braun: Programmability Models for Sensor Networks, First International Conference on Autonomous Infrastructure, Management and Security, AIMS 2007 , Oslo, Norway, June 21 - 22, 2007, pp. 233, Springer Verlag, ISBN 978-3-540-72985-3.

155.   Thomas Staub, Daniel Balsiger, Michael Lustenberger, Torsten Braun: Secure Remote Management and Software Distribution for Wireless Mesh Networks, 7th International Workshop on Applications and Services in

Wireless Networks (ASWN 2007) , Santander, Spain, May 24 - 26, 2007, pp. 47-54, ISBN 978-84-690-5727-8.

156.   Markus Wälchli, Piotr Skoczylas, Michael Meer, Torsten Braun: Distributed event localization and tracking with wireless sensors, 5th International Conference on Wired/Wireless Internet Communications (WWIC '07) , Coimbra, Portugal , May 23 - 26, 2007, pp. 247-258, Springer Verlag, ISBN 978-3-540-72694-4, Best Paper Award

157.   Philipp Hurni, Torsten Braun: Improving Unsynchronized MAC Mechanisms in Wireless Sensor Networks, 1st ERCIM Workshop on eMobility, Coimbra, Portugal , May 21, 2007, pp. 71-82, ISBN 978-972-95988-9-0.

158.   Markus Wälchli, Thomas Bernoulli, Torsten Braun: Receiver-based Backbone Construction and Maintenance for Wireless Sensor or Multi-Hop Networks, Workshop on Mobile Ad-Hoc Networks (WMAN 2007) at KiVS 2007 , Bern, Switzerland, March 1 - 2, 2007, pp. 409-420, VDE Verlag, ISBN 978-3-8007-2980-7.

159.   Marc Heissenbüttel: Routing and Broadcasting in Ad-Hoc Networks, Kommunikation in Verteilten Systemen (KiVS 2007) , Bern, Switzerland, February 26 - March 2, 2007, pp. 259-266, Springer Verlag, ISBN 978-3-540-69961-3.

160.   Torsten Braun, Thiemo Voigt, Adam Dunkels: TCP Support for Sensor Networks, IEEE/IFIP WONS 2007 , Obergurgl, Austria, January 24 - 26, 2007, pp. 162-169, IEEE, ISBN 1-4244-0860-1.

161.   Markus Wälchli, Samuel Bissig, Michael Meer, Torsten Braun: Distributed Event Tracking and Classification in Wireless Sensor Networks, Journal of Internet Engineering , Vol. 2, Nr. 1, June, 2008, pp. 117-126, Klidarithmos Press.

162.   Thomas Staub, Torsten Braun: ATOM: Adaptive Transport over Multipaths in Wireless Mesh Networks, 2nd ERCIM Workshop on eMobility , Tampere, Finland, May 30, 2008, ISBN 978-952-15-1972-7.

163.   Gerald Wagenknecht, Markus Anwander, Torsten Braun, Thomas Staub, James Matheka, Simon Morgenthaler: MARWIS: A Management Architecture for Heterogeneous Wireless Sensor Networks, 6th International Conference on Wired/Wireless Internet Communications (WWIC'08) , Tampere, Finland, Vol. LCNS, Nr. 5031, May 28 - 30, 2008, pp. 177-188, Springer, ISBN 978-3-540-68805-1.

164.   Philipp Hurni, Torsten Braun: Increasing Throughput for WiseMAC, IEEE/IFIP WONS 2008 , Garmisch-Partenkirchen, Germany, January 23 - 25, 2008, ISBN 978-1-4244-1958-6

165.   D. Morales-Jiménez, J. J. Sánchez, G. Gómez, M. Carmen Aguayo-Torres, J. T. Entrambasaguas, "Impact of Feedback Channel Delay on Adaptive OFDMA Systems", 1st ERCIM Workshop on EMobility, Coimbra (Portugal), May 2007.

166.   G. Gómez, J. Poncela, M.C. Aguayo-Torres, J.F. Paris, J.T. Entrambasaguas, "QoS Modeling for Performance Evaluation over Evolved 3G Networks," Third ACM Workshop on Q2S and Security for Wireless and Mobile Networks (Q2SWinet), Chania, Crete Island (Greece), October 2007

167.   J.Lorincz, G.Udovičić, D.Begušić:"Architecture of SQL Databases for WLAN Access Control and Accounting", Proceedings of 15th Internationl Conference on Software, Telecomunications and Computer Networks SoftCOM 2007, pp.280-285, Split-Dubrovnik, 2007.

168.   J.Lorincz, N.Ukić, D.Begušić:"Throughput Comparison of AODV and DSR Protocols in Multi-hop Static Environments", Proceedings of the 9th International Conference on Telecommunications on CD ConTEL 2007, pp.195-202, Zagreb, 2007.

169.   J.Lorincz, D.Begušić "Physical Layer Analysis of Emerging IEEE 802.11n WLAN Standard", Proceedings of tht 8th International Conference on Advanced Communication Technologies ICACT 2006, Proceedings Volume 1, pp.189-194, Seoul, South Korea, 2006.

170.   N.Rožić, M.Russo, D.Begušić, J.Radić: "Integrated Soft Media/Channel Image Communications Consumer Opportunities in QoS Control", Consumer Communications and Networking Conference CCNC 2005, Las Vegas, USA, 03-06.01.2005.

171.   M.Russo, D.Begušić, N.Rožić, M.Stella: "Speech Recognition over Bluetooth ACL and SCO Links: A Comparison", Consumer Communications and Networking Conference CCNC 2005, Las Vegas, USA, 03-06.01.2005.

172.   Rožić, Nikola; Russo, Mladen; Begušić, Dinko; Radić, Joško, "Integrated Soft Media/Channel Image Communications. Consumer Opportunities in QoS Control", In the Proceedings of the IEEE Consumer Communications and Networking Conference - CCNC 2005.

173.   Josip Lörincz, Dinko Begušić, "Estimation of the Effective Throughput in 802.11b WLAN Networks", SoftCOM 2004, 12th International Conference on Software, Telecommunications and Computer Networks, October 10-13, 2004., Split-Venice-Dubrovnik-Split, Conference proceedings SoftCOM 2004, p.p. 550.-555.

174.   Rožić, Nikola; Kandus, Gorazd, "MIMO ARIMA Models for Handoff Resource Reservation in Multimedia Wireless Networks", Journal on Wireless Communications and Mobile Computing. 4 (2004) , 5; 497-512.

175.   Rebić, J; Rožić, Nikola, "Resource Reservation in IP Networks", in the Proceedings of the 12th International Conference on Software, Telecommunications and Computer Networks (SoftCOM'04) / Split : 2004. 6-10.

176.   Rožić, Nikola; Kandus, Gorazd, "Integrated Soft Media/Channel Decoding: User Controlled QoS", in the Proceedings of the International Telecommunications Symposium, Next Generation User (VITEL'04), May 17-18, 2004.

177.   M. Mohorcic, D. Grace, G, Kandus, T. Tozer »Boradband communications from aerial platform networks« 13th IST Mobile & Wireless Communications Summit 2004, Lyon, France, 27-30 June. Proceedings. vol. 1, pp. 257-261.

178.   T. Javornik, G. Kandus, S. Plevel »Dynamic channel mapping strategies in adaptive MIMO systems«. International Conference on Software, Telecommunications and Computer Networks, 2004.Split-Dubrovnik, Croatia, Venice, Italy, October 10-13, Proceedings. SOftCOM 2004, pp. 69-73.

179.   A. Vilhar, R. Novak, G. Kandus »Multihoming benefits for network mobility in HAP networks« 3rd Advanced Satellite Mobile Systems Conference, 29-31 May 2006, Herrsching am Ammersee, Munich, Germany, Proceedings. ASMS 2006. 8 pp.

180.   T. Javornik, G. Kandus, A. Hrovat, I. Ozimek »Comparison of WiMAX coverage at 450MHz and 3.5GHz. 14th International Conference on Software, Telecommunications & Computer Networks, September 29 - October 1, 2006, Split, Dubrovnik, Croatia. SoftCOM 2006. 8 pp.

181.   B. Bellalta, C. Macian, A. Sfairopoulou, C. Cano; "Evaluation of Joint Admission Control and VoIP Codec Selection Policies in Generic Multirate Wireless Networks". NEW2AN-07. St. Pertersburg, Russia, September 2007.

182.   A. Sfairopoulou, C. Macian, B. Bellalta; "VoIP codec adaptation algorithm in multirate 802.11 WLANs : distributed vs centralized performance comparison". 13th EUNICE European Summer School, Univ. of Twente, Netherlands, 18-20 July 2007.

183.   B. Bellalta, M. Meo, M. Oliver; "A BEB-based Admission Control for VoIP calls in WLAN with coexisting elastic TCP flows". NEW2AN'06. St. Pertersburg, Russia, June 2006.

184.   B. Bellalta, M. Meo, M. Oliver; "Comphrensive analytical models to evaluate the TCP performance in 802.11 WLANs". IEEE WWIC'06. Bern, Switzerland, May 2006.

185.   C. Cano, B. Bellalta, M. Oliver; "Adaptive Admission Control Mechanism for IEEE 802.11e WLANs". The 18th IEEE PIMRC 2007, Athens, Greece, September 2007.

186.   B. Bellalta, M. Meo, M. Oliver, M. Guerrero; "A simple model of the IEEE 802.11 MAC protocol with heterogeneous traffic flows". IEEE Eurocon 2005. Belgrade (Serbia and Montenegro). November 2005.

187.   N. Vassileva, F. Barcelo-Arroyo, "Performance of a Traffic-Based Handover Method in High-Mobility Scenarios", The 4th International Workshop on Performance Modelling and Analysis of Communication in Wired and Wireless Networks (PMAC-2WN'08), December 2008.

188.   N. Vassileva, F. Barcelo-Arroyo, "Evaluation of CAC Methods under non-Poisson Arrival Traffic in Cellular Networks", Eleventh IEEE

International Conference on Communications Systems (ICCS 2008), November 2008.

189.   N. Vassileva, F. Barcelo-Arroyo, "A survey of routing protocols for maximizing the lifetime of ad hoc wireless networks," International Journal on Software Engineering and Its Applications, vol.2, no.3, pp. 77-90, July 2008.

190.   N. Vassileva, F. Barcelo-Arroyo, "A new CAC policy based on traffic characterization in cellular networks," Proc. of the 6th Int. Conf. on Wired/Wireless Internet Communications Conference (WWIC 08) - LNCS 5031, Springer, pp. 1-12, Tampere (Finland), May 2008.

191.   M. Catalan, C. Gomez, A. Calveras, J. Paradells, "Web Optimization in Real UMTS Networks with Channel Switching Mechanisms", IEEE Vehicular Technology Conference, Spring, pp. 2497-2501, Singapore, May 2008.

192.   N. Vassileva, F. Barcelo-Arroyo, "A Survey of Routing Protocols for Energy Constrained Ad Hoc Wireless Networks", International Conference on Future Generation Communication and Networking (FGCN 2007), Jeju Island (Korea), December 2007.

193.   Spedalieri, I. Martín-Escalona, F. Barceló-Arroyo, "Impact of the Variance of Call Duration on Teletraffic Performance in Cellular Networks", 1st ERCIM Workshop on Emobility, pp. 11-22, Coimbra (Portugal), May 2007.

194.   Antonietta Spedalieri, Israel Martín-Escalona, Francisco Barcelo, "Simulation of Teletraffic Variables in UMTS Networks: Impact of Lognormal Distributed Call Duration", IEEE Wireless Communications and Networking Conference (WCNC05), Vol. 4, pp. 2381 – 2386, New Orleans (USA), 2005.

195.   M. Catalan, C. Gomez, D. Viamonte, J. Paradells, A. Calveras, F. Barcelo, "TCP/IP analysis and optimization over a live UMTS network", IEEE Wireless and Communications Networking Conference (WCNC'05). Vol. 3, pp. 1503 – 1508, New Orleans (USA), 2005.

196.   C. Gomez, M. Catalan, X. Mantecon, J.Paradells, "Evaluating performance of real ad-hoc networks using AODV with hello message mechanism for maintaining local connectivity", IEEE International Symposium on Personal, Indoor and Mobile Communications (PIMRC 2005). Berlin, Germany, 2005.

197.   A. Spedalieri, I. Martin-Escalona, F. Barcelo, "Simulation Analysis of Teletraffic Variables in DCA Cellular Networks", ECUMN 2004 – LNCS 3262, pp. 540-553, Porto (Portugal) Oct. 2004.

198.   D. Moltchanov "Problems arising in evaluating perceived quality of media applications in packet networks," In Proc. 18th ITC Specialist Seminar on Quality of Experience, Karlskrona Sweden.

199.   D. Moltchanov, R. Dunaytsev "Cross-Layer modeling of TCP SACK performance over wireless channels with completely reliable ARQ/FEC," In Proc. WWIC 2008, Tampere Finland.

200.   D. Moltchanov, R. Dunaytsev "TCP performance over wireless channels with unreliable ARQ," In Proc. ERCIM 2008, Tampere Finland.

201.   Moltchanov D., Dunaytsev, R. "Modeling TCP performance over wireless channels using fixed-point approximation," In Proc. 15th ITC, St.-Petersburg Russia.

202.   Moltchanov D. "The effect of data-link layer reliability on performance of wireless channels," In Proc. 19th PIMRC, Cannes France.

203.   Moltchanov D. "On-line wireless channel modeling for performance control purposes," In Proc. NEW2AN 2008, St.-Petersburg Russia.

204.   Moltchanov D., Dunatsev, R. "Modeling TCP performance over wireless channels with a semi-reliable data-link layer," IEEE ICCS'08, Guanzhou China.

205.   Moltchanov D. "On-line state detection in time-verying traffic patterns," In Proc. NEW2AN, St-Petersburg, Russia, September 2007.

206.   Moltchanov D., "Cross-layer performance modeling of wireless channels," In Proc. 1st ERCIM Workshop on eMobility, Coimbra, Portugal, May 2007.

207.   Moltchanov D. "Monitoring the state of wireless channels in terms of the covariance stationary PDU error process," In Proc. ITC 2006, Madeira, Portugal.

208.   Moltchanov D. "The structure of the reactive performance control system for wireless channels," In Proc. NEW2AN 2006, St.Petersburg, Russia.

209.   Moltchanov D. "State description of wireless channels using change-point statistical tests," In Proc. WWIC 2006, Bern, Switzerland.

210.   Agata Brajdic, Ozren Lapcevic, Maja Matijasevic, Miran Mosmondor, "Service Composition in IMS: A Location Based Service Example", Proc. of the 3rd International Symposium on Wireless Pervasive Computing, ISWPC 2008, Santorini, Greece, 2008, pp. 208-212.

211.   Dario Dujuric, Ognjen Dobrijević, Darko Huljenic, Maja Matijasevic, "Open Diameter Conformance Testing", Proc. of the Sixth International Symposium on Communication Systems, Networks and Digital Signal Processing, Graz, Austria, 2008, pp. 124-128.

212.   Mirko Suznjevic, Maja Matijasevic, Ognjen Dobrijevic, "Action specific Massive Multiplayer Online Role Playing Games traffic analysis: Case study of World of Warcraft", Proc. of the 7th ACM SIGCOMM workshop on Network and Systems Support for Games NetGames 2008, Worcester, MA, USA, 2008, pp. 106-107.

213.   J. Leino, A. Penttinen and J. Virtamo "Flow-optimized random access for wireless multihop networks", in Proceedings of ACM MSWiM 2007, pp. 387-394, 2007, Chania, Crete Island.

214.   C. Balakrishna, K. Al-Begain, "Towards a User-Centric and Quality-Aware Multimedia Service Delivery Implementation on IP Multimedia Subsystem ", in Proc. Of the First International Conference on Next Generation Mobile Applications, Services and Technologies, NGMAST '07, Cardiff, UK, September 2007.

215.   C. Balakrishna, K. Al-Begain, "A Reality Check on Sip-based Streaming Applications on the Next Generation Mobile Test Network", IEEE COMSWARE 2008, January 16th, Bangalore, India.

216.   S.Y. Yerima and K. Al-Begain "An Enhanced Buffer Management Scheme for Multimedia Traffic in HSDPA". Proc. International Conference on Next Generation Mobile Applications, Services and Technologies (NGMAST 2007) Broadband Wireless Access Workshop, Cardiff, Wales, pp 292-297, ISBN- 0-7695-2878-3 September 12-14, 2007.

217.   S.Y. Yerima and K. Al-Begain "Performance Modelling of a Queue Management Scheme with Rate Control for HSDPA" Proc. The 8th Annual Postgraduate Symposium on The Convergence of Telecommunications, Networking & Broadcasting (PG Net 2007), Liverpool, June 28-29, 2007.

218.   S.Y. Yerima and K. Al-Begain "Buffer Management for Multimedia QoS control over HSDPA Downlink" Proc. IEEE 21st International Conference on Advanced Information Networking and Applications (AINA 2007), Niagara Falls, Ontario Canada. Volume 1, pp 912-917, ISBN: 0-7695-2647-3, May 2007.

219.   S.Y. Yerima and K. Al-Begain "Buffer Management for Downlink Multimedia QoS Control in HSDPA Radio Access Networks" Proceedings of the 1st Faculty of Advanced Tech. Workshop, University of Glamorgan, U.K. pp70-74, ISBN: 978-1-84054-156-4, May 2007.

220.   S.Y. Yerima and K. Al-Begain "An Enhanced Buffer Management Scheme for Multimedia Traffic in HSDPA". Proc. International Conference on Next Generation Mobile Applications, Services and Technologies (NGMAST 2007) Broadband Wireless Access Workshop, Cardiff, Wales, pp 292-297, ISBN- 0-7695-2878-3 September 12-14, 2007.

221.   S.Y. Yerima and K. Al-Begain "Performance Modelling of a Queue Management Scheme with Rate Control for HSDPA" Proc. The 8th Annual Postgraduate Symposium on The Convergence of Telecommunications, Networking & Broadcasting (PG Net 2007), Liverpool, June 28-29, 2007.

222.   S.Y. Yerima and K. Al-Begain "Buffer Management for Downlink Multimedia QoS Control in HSDPA Radio Access Networks" Proceedings of the 1st Faculty of Advanced Tech. Workshop, University of Glamorgan, U.K. pp70-74, ISBN: 978-1-84054-156-4, May 2007.

223.   S.Y. Yerima and K. Al-Begain "Analysis of M2/M/1/R, N Queuing model for Multimedia over 3.5G Wireless Network Downlink" Proceedings of the European Modelling Symposium (EMS 2006), London, U.K. pp 79-83, ISBN: 0-9516509-9/978-0-9516509-3-6, September 2006.

224.   C. Balakrishna, K. Al-Begain, A Cross Layer Approach for Adaptive Multi-level QoS Mobile Multimedia Multicast in Next Generation Wireless Internets, IST mobile summit, Greece, June5-9, 2006.

225.   C. Balakrishna, K. Al-Begain, SIP-Based Multimedia Multicast Adaptive Transmission Mechanism in Next Generation Wireless Internet, PGNet 2006, June26-28, Liverpool, 2006.

226.   M. Ries, O. Nemethova, M. Rupp, "Reference-Free Video Quality Metric for Mobile Streaming Applications," in Proc. of the DSPCS 05 & WITSP 05, pp. 98-103, Sunshine Coast, Australia, Dec. 2005.

227.   M. Ries, O. Nemethova, B. Badic, M. Rupp, "Assessment of H.264 Coded Panorama Sequences," in Proc. of the First International Conference on Multimedia Services and Access Networks, Orlando, Florida, Jun. 2005.

228.   M. Ries, J. Kubanek, M. Rupp, "Video Quality Estimation for Mobile Streaming Video Quality Estimation for Mobile Streaming," in Proc. Of Measurement of Speech and Audio Quality Networks, Prag, Czech Republic, 2006.

229.   M. Ries, O. Nemethova, M. Rupp, "Motion Based Reference-Free Quality Estimation for H.264/AVC Video Streaming," in Proc. of IEEE Int. Symp. On Wireless Pervasive Computing (ISWPC), San Juan, Puerto Rico, US, Feb. 2007.

230.   M. Ries, O. Nemethova, C. Crespi, M. Rupp, "Content Based Video Quality Estimation for H.264/AVC Video Streaming," in Proc. of IEEE Wireless Communications and Networking Conf. (WCNC), pp. 2668–2673, Hong Kong, Mar. 2007.

231.   M. Ries, O. Nemethova, M. Rupp,"Performance evaluation of mobile video quality estimators," invited paper, in Proc. of 15th European Signal Processing Conference (EUSIPCO), Poznan, Polen, Sep. 2007.

232.   M. Ries, O. Nemethova, M. Rupp, "On the Willingness to Pay in Relation to Delivered Quality of Mobile Video Streaming," in Proc. of IEEE ICCE 2008, Las Vegas, USA, pp. 195 - 196, 2008.

233.   Mirtchev S. and I. Stanev. Evaluation of a Single Server Delay System with a Generalized Poisson Input Stream. International Teletraffic Congress - ITC19, Beijing, China, Vol.6a, 2005, pp.553-542.

234.   Mirtchev S. Palm's Machine-Repair Model with a Generalised Poisson Input Stream and Constant Service Time. 14th International Conference on Software, Telecommunications and Computer Networks - SOFTCOM, 2006, Split, Croatia, pp. 81-85.

235.   Statev S. and S. Mirtchev. Evaluation of a Congestion Control Transport Protocol for Real Time Applications in NGN. XLII International Scientific Conference on Information, Communication and Energy Systems and Technologies, ICEST 2007, Ohrid, Macedonia, 2007, pp. 193-196.

236.   Mirtchev S. Study of Queueing Behaviour in IP Buffers, Fifth International Conference on Information Research and Applications, i.TECH 2007, Proceedings, Vol. 2, Institute of Information Theories and Applications FOI ITHEA, Sofia, Bulgaria,2007, pp. 468-475.

237.   Mirtchev S. and S. Statev. Study of Queueing Systems with a Generalized Departure Process, Serdica Journal of Computing, Vol. 2, Num. 1, 2008, pp. 57-72.

238.   Dirk Staehle, Andreas Mäder, "An Analytic Model for Deriving the Node-B Transmit Power in Heterogeneous UMTS Networks",IEEE VTC Spring, Milano, Italy, May 2004.

239.   Dirk Staehle, "On the Code and Soft Capacity of the UMTS FDD Downlink and the Capacity Increase by using a Secondary Scrambling Code", IEEE International Symposium on Personal Indoor and Mobile Radio Communications (PIMRC), Berlin, Germany, September 2005.

240.   Andreas Mäder, Dirk Staehle, Bernd Schröder, "Dimensioning of Hardware Components in UMTS Networks with Sectorized NodeBs", 19th International Teletraffic Congress (ITC19), Bejing, China, September 2005.

241.   Andreas Mäder and Dirk Staehle, "An Analytical Model for Best Effort Traffic over the UMTS Enhanced Uplink", Proc. of VTC Fall '06, Montreal, CA, September 2006.

242.   Rastin Pries, Andreas Mäder, and Dirk Staehle, "A Network Architecture for a Policy-Based Handover Across Heterogeneous Networks", OPNETWORK 2006, Washington D.C., USA, August 2006.

243.   Andreas Mäder and Dirk Staehle, "A Novel Performance Model for the HSDPA with Adaptive Resource Allocation", ITC 20, Ottawa, Canada, June 2007.

244.   Andreas Mäder and Dirk Staehle, "A flow-level Simulation Framework for HSDPA-enabled UMTS Networks", ACM/IEEE MSWiM '07, Crete, Greece, October 2007.

245.   Dirk Staehle and Andreas Mäder, "A Model for Time-Efficient HSDPA Simulations", IEEE VTC Fall '07, Baltimore, USA, October 2007.

246.   Barbara Staehle and Dirk Staehle,"Impact of Energy Models on Energy Efficient Sensor Network Routing", 4th IEEE International Conference on Mobile Ad-hoc and Sensor Systems, Pisa, Italy, October 2007.

247.   P. Antoniou, V. Vassiliou, A. Pitsillides, "ADIVIS: A Novel Adaptive Algorithm for Video Streaming over the Internet", In Proc. of the 18th Annual International Symposium on Personal Indoor and Mobile Radio Communications (PIMRC2007), Athens, Greece, September 2007

248. P. Antoniou, A. Pitsillides, V. Vassiliou, "Adaptive Feedback Algorithm for Internet Video Streaming based on Fuzzy Rate Control", In Proc. of the 12th IEEE Symposium on Computers and Communications (ISCC'07), July 1-4 2007, Aveiro, Portugal

249. V. Vassiliou and Z. Zinonos, "An Experimental Analysis of the Mobile IPv6 Handover Latency Components ," In Proc. of the 1st ERCIM Workshop on eMobility (in conjunction with WWIC2007), Coimbra, Portugal, May 21, 2007.

250. P. Antoniou, V. Vassiliou, A. Pitsillides, "Delivering Adaptive Scalable Video over the Wireless Internet," In Proc. of the 1st ERCIM Workshop on eMobility (in conjunction with WWIC2007), Coimbra, Portugal, May 21, 2007.

251. V. Vassiliou and A. Pitsillides, "Supporting Mobility Events within a Hierarchical Mobile IP-over-MPLS Network", Journal of Communications (JCM), Vol.2, Issue: 2, pp. 61-7, March 2007, (ISSN: 1796-2021)

252. M. Neophytou, K. Stavrou, V. Vassiliou and A. Pitsillides, "The Importance of Adaptive Applications in Mobile Wireless Networks," In Proc. of the Symposium on QoS in Wireless Multimedia Networks, part of the 2006 International Conference on Software, Telecommunications and Computer Networks (SoftCom 2006), Split - Dubrovnik, Croatia, September 29-October 1, 2006

253. M. Hadjiona, C. Georgiou and V. Vassiliou, "A Hybrid Fault-Tolerant Algorithm for MPLS Networks," In Proc. of the 2006 International Conference on Software, Telecommunications and Computer Networks (SoftCom 2006), Split - Dubrovnik, Croatia, September 29-October 1, 2006

254. V. Vassiliou, P. Antoniou, I. Giannakou, and A. Pitsillides "Requirements for the Transmission of Streaming Video in Mobile Wireless Networks," In Proc. of the 16th International Conference on Artificial Neural Networks (ICANN 2006), Athens, Greece, 10 -14 September, 2006.

255. V. Vassiliou and A. Pitsillides, "QoS Adaptation Control in Virtual Circuit Switched Mobile Networks," In Proc. of the International Conference on Intelligent Systems And Computing: Theory And Applications (ISYC 2006), Ayia Napa, Cyprus, 6-7 July 2006.

256. R. Vida, K. Farkas, D. Grigoras, U. Roedig, J. sá Silva, P. Todorova, A. Pitsillides, V. Vassiliou, L. Wolf, "Mobile and Ambient Environments of the Future: Research Challenges for Wireless Ad-Hoc and Sensor Networks," China Communications Journal, vol. 3, no 3, June 2006.

257. V. Vassiliou, "Design Considerations for Introducing Micromobility in MPLS," In Proc. of the IEEE Symposium on Computers and Communications (ISCC 2006), Pula-Cagliari, Sardinia, Italy, June 25-29 2006.

258. V. Vassiliou, "Handover Operation in Mobile IP-over-MPLS Networks," In Proc. of the NETWORKING 2006 - Fifth IFIP Networking Conference, Coimbra, Portugal, May 15-19 2006.

259. V. Vassiliou , J. Antoniou, A. Pitsillides, and G. Hadjipollas, "Simulating Soft Handover and Power Control for Enhanced UMTS," In Proc.

of the 16th Annual International Symposium on Personal Indoor and Mobile Radio Communications (PIMRC2005), Berlin, Germany, September 15-19 2005

260.   D. A. Barlow, V. Vassiliou, S. Krasser, H. Owen, , J Grimminger, H-P Huth, and J. Sokol, "Traffic Engineering Based on Local States in Internet Protocol-Based Radio Access Networks," Journal of Communications and Networks, Vol. 7, No 3, pp377-384, September 2005

261.   V. Vassiliou, "Performance Evaluation of a QoS Adaptation Framework for Mobile Networks," In Proc. 11th European Wireless Conference (EW 2005), Nicosia, Cyprus, 10-13 April 2005.

262.   N. Vlotomas, J. Antoniou, G. Hadjipollas, V. Vassiliou, A. Pitsillides, "Power Control for Efficient Multicasting in IP-based 3G and beyond Mobile Networks," In Proc. 11th European Wireless Conference (EW 2005), Nicosia, Cyprus, 10-13 April 2005.

263.   V. Vassiliou, J. Antoniou, G. Hadjipollas, A. Pitsillides, "A Simulation tool to evaluate Radio Resource Management algorithms for Enhanced UMTS", In Proc. 3rd International Symposium on Modeling and Optimization in Mobile,Ad-hoc and Wireless Networks (WiOpt 2005), Trentino, Italy, 3-5 April 2005.

264.   C. Panayiotou, V. Vassiliou, A. Pitsillides, "Dynamic Control of the Threshold Policy for MPEG Video Streaming," In Proc. of Second International Working Conference on Performance Modelling and Evaluation of Heterogeneous Networks (HET-NETs '04), Ilkley, West Yorkshire, U.K. July 26-28, 2004.

265.   P. Ioannou, A. Pitsillides, Introduction and overview, Book Chapter in Modelling and Control of Complex Systems (Edited by Petros Ioannou and Andreas Pitsillides), CRC Press in the Control Engineering Series edited by Frank Lewis. 2007.

266.   M. Lestas, A. Pitsillides, P. Ioannou, Congestion Control in Computer Networks, Book Chapter in Modelling and Control of Complex Systems (Edited by Petros Ioannou and Andreas Pitsillides), CRC Press in the Control Engineering Series edited by Frank Lewis. 2007.

267.   N. Panteli, B. Pitsillides, A. Pitsillides, G. Samaras, An E-healthcare Mobile application: A Stakeholders' analysis, in Web Mobile-Based Applications for Healthcare Management (Editor Dr Latif Al-Hakim), Book chapter, Idea Group, 2006.

268.   B. Pitsillides, A. Pitsillides, G. Samaras, M. Nicolaou, DITIS: Virtual collaborative teams for improved home healthcare, Book Chapter in VIRTUAL TEAMS: CONCEPTS AND APPLICATIONS, edited by K.Chandrasekar, ICFAI UNIVERSITY PRESS, 2005, p. 147-172.

269.   A. Pitsillides, B. Pitsillides, G. Samaras, M. Dikaiakos, E. Christodoulou, P. Andreou, and D. Georgiades, A Collaborative Virtual Medical Team for Home Healthcare of Cancer Patients, Book Chapter, M-Health: Emerging Mobile Health Systems, (R. H. Istepanian, S. Laxminarayan, C. S. Pattichis, Editors), Kluwer Academic/Plenum Publishers, Springer Science, 2005, pp. 247-266.

270.   G. Samaras, D. Georghiades, and A. Pitsillides, Computational and Wireless Modeling for Collaborative Virtual Medical Teams, Book Chapter, M-Health: Emerging Mobile Health Systems, (R. H. Istepanian, S. Laxminarayan, C. S. Pattichis, Editors), Kluwer Academic/Plenum Publishers, Springer Science, 2005, pp. 107-132.

271.   B. Pitsillides, A. Pitsillides, G. Samaras, E. Christodoulou, N. Panteli, P. Andeou, D. Georgiades, User Perspective Of Ditis: Virtual Collaborative Teams For Home-Healthcare, IOS press book series "Studies on Health Technology and Informatics", 100th "Golden" volume, Current Situation and Examples of Implemented and Beneficial E-Health Applications, 2004, hardcover ISBN: 1 58603 448 0, p. 205-216.

272.   A. Jossif, C.S. Pattichis, M. Kyriakides, A. Pitsillides, E. Kyriacou, M. Dikaiakos, Selected eHealth Applications in Cyprus from the Training Perspective, Special Issue of Methods of Information in Medicine Journal: Health and Medical Informatics Applications – Educational Aspects, Accepted for publication 2006.

273.   C. Chrysostomou and A. Pitsillides, Fuzzy Logic based Congestion Control in Computer Networks, WSEAS Transactions on Communications, Issue 8, Volume 5, August 2006, pp. 1521-1527.

274.   A. Pitsillides, G. Samaras, B. Pitsillides, D. Georgiades, P. Andreou, E. Christodoulou, Virtual Collaborative Healthcare Teams for Home Healthcare, Journal of Mobile Multimedia (JMM), special issue on Advanced Mobile Technologies for Health Care Applications, Vol.2, No.1, 2006, pp. 023-036.

275.   K. G. Fouskas, G. M. Giaglis, S. Karnouskos, P. E. Kourouthanassis, A. Pitsillides, M. Stylianou A Roadmap for Research in Mobile Business, International Journal of Mobile Communications (IJMC), Volume 3 - Issue 4 – 2005, pp. 350-373.

276.   A. S. Andreou, C. Leonidou, C. Chrysostomou, A. Pitsillides, G. Samaras, C. N. Schizas, S. M. Mavromoustakos, Key issues for the design and development of mobile commerce services and applications, International Journal of Mobile Communications (IJMC), Volume 3 - Issue 3 - 2005, pp. 303 – 323.

277.   A. Pitsillides, P. Ioannou, M. Lestas, L. Rossides, Adaptive nonlinear congestion controller for a differentiated-services framework, IEEE/ACM Transactions of Networking, Vol. 13, Number 1, Feb. 2005, pp. 94-107.

278.   B. Pitsillides, A. Pitsillides, DITIS: a collaborative system to support home care by a virtual multidisciplinary team, European Journal of Palliative Care, 11(5), 2004, pp. 202-203.

279.   M. Neophytou, A. Pitsillides, Hybrid CAC for MBMS-enabled 3G UMTS Networks, 17th International Symposium on Personal, Indoor, and Mobile Radio Communications (PIMRC'06), Helsinki, Finland, 11-14 September, 2006.

280.   C. Chrysostomou and A. Pitsillides, "Congestion control in computer networks using fuzzy logic", in Proceedings of the 10th WSEAS International Conference on Communications: Novel Approaches to Analysis, Modelling

and Control of Internet Traffic, Athens, Greece, July 13-15, 2006, pp. 539-544.

281.   J. Antoniou, A. Pitsillides, "Radio Access Network Selection Scheme in Next Generation Heterogeneous Environments" 15th IST Mobile & Wireless Communications Summit 2006, Myconos, Greece, 4-8 June 2006. (CD ROM, session 22, 5 pages)

282.   C. Chrysostomou, A. Pitsillides, Fuzzy Logic Congestion Control in TCP/IP Tandem Networks, 11th IEEE Symposium on Computers and Communications, ISCC06, Sardinia, Italy, June 26 –29, 2006, pp. 123-129.

283.   C. Christophorou, A. Pitsillides, An Efficient Handover Algorithm for MBMS Enabled 3G Mobile Cellular Networks, 11th IEEE Symposium on Computers and Communications, ISCC06, Sardinia, Italy, June 26 –29, 2006, pp. 161-168.

284.   J. Lai, A. Sekercioglu, A. Pitsillides, Performance Evaluation of Mobile IPv6 Handover Extensions in an IEEE 802.11b Wireless Network Environment, 11th IEEE Symposium on Computers and Communications, ISCC06, Sardinia, Italy, June 26 –29, 2006, pp. 187-193.

285.   C. Christoforou, A. Pitsillides MBMS Handover Control for Efficient Multicasting in IP-based 3G mobile networks, 2006 IEEE International Conference on Communications (ICC 2006), Istanbul, Turkey, 11-15 June 2006.

286.   E. Stavrou, A. Pitsillides, "Securing Mobile Healthcare Systems based on Information Classification: DITIS Case Study", WOSIS-2006, Paphos, Cyprus, May 2006.

287.   E. Stavrou, A. Pitsillides, e-healthcare Security Framework: DITIS Case Study, ISHIMR, 10th International Symposium for Health Information Management Research Thessaloniki, Sept 22-24, 2005.

288.   C. Panayiotou, M. Andreou, G. Samaras, A. Pitsillides, "Time Based Personalization for the Moving User", Proceedings of International Conference mBusiness (2005), Sydney, Australia, 11-13 July 2005.

289.   M. Lestas, P. Ioannou, A. Pitsillides, Global Stability of Congestion Control in Networks, Workshop on Modeling and Control of Complex Systems, Ayia Napa, Cyprus on June 30 , July 1 2005 (CD ROM proceedings).

290.   C. Chrysostomou, A. Pitsillides, Using Fuzzy Logic Control to Address Challenges in AQM Congestion Control in TCP/IP Networks,, Workshop on Modeling and Control of Complex Systems, Ayia Napa, Cyprus on June 30 , July 1 2005 (CD ROM proceedings).

291.   A. Andreou, D. Panayiotidou, P. Andreou, A. Pitsillides, Preserving Quality in the Development of Mobile Commerce Services and Applications, IASTED International Conference on -Software Engineering (ACIT-SE 2005), June 20-24, Novosibirsk, Russia, 2005.

292.   E. Stavrou, A. Pitsillides, Security Challenges in a Mobile Healthcare Environment, IWWST '05, 3rd International Workshop in Wireless Security Technologies, 4-5 April 2005, London, UK

293.   M. Lestas, P. Ioannou, A. Pitsillides, On a Hybrid Model for Max-Min Congestion Controllers, 43rd IEEE Conference on Decision and Control (CDC 2004), Bahamas, December 14-17, 2004. pp. 543-548 (CD ROM Proceedings - ISBN: 0-7803-8683-3, IEEE Catalog Number: 04CH37601C).

294.   C. Chrysostomou, A. Pitsillides, G. Hadjipollas, M. Polycarpou, A. Sekercioglu, "Congestion Control in Differentiated Services Networks using Fuzzy Logic", 43rd IEEE Conference on Decision and Control (CDC 2004), Bahamas, December 14-17, 2004, pp. 549-556 (CD ROM Proceedings - ISBN: 0-7803-8683-3, IEEE Catalog Number: 04CH37601C).

295.   C. Chrysostomou, G. Hadjipollas, A. Pitsillides, Fuzzy Logic Control in TCP/IP Networks, in Proceedings of the International Conference on Integrated Modeling & Analysis in Applied Control & Automation (IMAACA'2004), special session on "Network Control and Network Controlled Systems", Genoa, Italy, 28-30 October 2004, pp. 260-269.

296.   M. Lestas, P. A. Ioannou, A. Pitsillides, A Congestion Control Algorithm for Max-Min Resource Allocation and Bounded Queue Sizes, American Control Conference (ACC'2004), Boston, USA, June 30 - July 2, 2004, Volume 2, pp. 1683 – 1688.

297.   E. Christodoulou, G. Samaras, A. Pitsillides, P. Germanakos, ICT Past Assessment in Cyprus: Visioning Future Key Innovative Digital Enhancements and Trends, 4th EU eGovernment Conference in Dublin, 17-18 June 2004.

298.   C. Chrysostomou, A. Pitsillides, G. Hadjipollas, M. Polycarpou, A. Sekercioglu, Fuzzy Logic Control for Active Queue Management in TCP/IP Networks, 12th Mediterranean Conference on Control and Automation (MED'04), Kusadasi, Aydin, Turkey, 6-9 June 2004 (CD ROM Proceedings).

299.   Performance Evaluation of Structured P2P over Wireless Multi-hop Networks, Marcel C. Castro, Eva Villanueva, Iraide Ruiz, Susana Sargento, and Andreas J. Kassler, in: Proceedings of the International Conference on Advances in Mesh Networks (MESH 2008), Cap Esterel, France August 25-31 2008.

300.   TCP Performance and Packet Aggregation in Wireless Mesh Networks under low link quality, Jonas Karlsson, and Andreas Kassler, in: Proceedings of 2nd ERCIM e-Mobility Workshop, Tampere, Finland, May 30, 2008.

301.   Implementing Packet Aggregation in the Linux Kernel, Jonas Brolin, Peter Dely, Mikael Hedegren, Andreas Kassler, in: Scandic Ad-Hoc Workshop, Stockholm, May 2008.

302.   Adaptive Aggregierung von VoIP Paketen in Wireless Mesh Networks, Peter Dely, Andreas Kassler, in Proceedings of WMAN FG 2008 (Ulmer Informatik Bericht), Ulm Germany, April 2008.

303.   Capacity Increase for Voice over IP Traffic through Packet Aggregation in Wireless Multihop Mesh Networks, Marcel C. Castro, Peter Dely, Jonas Karlsson, Andreas Kassler, in: Proceedings of WAMSNET

International Workshop on Wireless Ad Hoc, Mesh and Sensor Networks, Jeju Island, Korea. December 2007. Received BEST PAPER AWARD.

304.   VoIP Packet Aggregation based on Link Quality Metric for Multihop Wireless Mesh Networks, Andreas Kassler, Marcel Castro, Peter Dely, in: Proceedings of the Future Telecommunication Conference, Beijing, China, October 2007.

305.   On Packet Aggregation for VoIP in Wireless Meshed Networks, Peter Dely, Andreas J. Kassler, in: Proceedings of Scandic Workshop on Ad Hoc Networks, Johannesberg slots, May 2007.

306.   TCP Performance in Mobile Ad Hoc Networks Connected to the Internet, Jonas Karlsson, Alba Battle Linares, Andreas J. Kassler and Bu Sung Lee, in: Proceedings of International Workshop on Telecommunications, Minas Gerais, Brazil, February 2007.

307.   SIP based Service Provisioning for hybrid MANETs, Marcel Cavalcanti de Castro and Andreas J. Kassler, in: Proceedings of International Workshop on Telecommunications, Minas Gerais, Brazil, February 2007.

308.   Challenges of SIP in Internet Connected MANETs, Marcel Cavalcanti de Castro and Andreas J. Kassler, in: Proceedings of International Symposium of Wireless Pervasive Computing, San Juan, Puerto Rico, February 2007.

309.   Seamless Interworking of WLAN and WMAN Wireless Networks, Tara Ali Yahiya, Hakima Chaouchi, Andreas Kassler, Guy Pujolle, in Proceedings of International Workshop on Mobile Services and Personalized Environments (MSPE'06), Aachen, Germany, November 2006.

310.   SIP in hybrid MANETs – A gateway based approach, Marcel Cavalcanti de Castro and Andreas J. Kassler, in: Proceedings of SNCNW, Luleå, Sweden, October 2006.

311.   Optimizing SIP service provisioning in internet connected MANETs (Invited Paper), Marcel C. Castro and Andreas J. Kassler, in Proceedings of International Symposium on QoS in Wireless Multimedia Networks, Split, Croatia, September 2006.

312.   QoS-aware Mesh Construction to Enhance Multicast Routing in Mobile Ad Hoc Networks (Invited Paper), Harald Tebbe, Andreas Kassler, Pedro Ruiz, in Proceedings of Intersense 2006, Nice, France, May 2006.

313.   QAMNet: Providing Quality of Service to Ad-hoc Multicast Enabled Networks, H. Tebbe, A. Kassler, 1st International Symposium on Wireless Pervasive Computing 2006 (ISWPC), 16 - 18 January 2006, Phuket, Thailand.

314.   Quality of Service for Ad hoc Multicast Communication, H. Tebbe, A. Kassler, in: Proceedings of the Swedish National Computer Networking Workshop (SNCNW 2005), 23 – 24 November, Halmstad, Sweden.

315.   Security Extensions to MMARP Through Cryptographically Generated Addresses, F. Galera, P. Ruiz, A. Kassler, 3rd German Workshop on Ad Hoc Networks (WMAN 2005), Bonn, Germany, September 2005.

316.   Quality of Service for MANETs connected to the Internet, A. Kassler, C. ShanShan, 3rd German Workshop on Ad Hoc Networks (WMAN 2005), Bonn, Germany, September 2005.

317.   Extending SWAN to Provide QoS for MANETs Connected to the Internet, A. Kassler, C. ShanShan, in Proceedings of the Second International Symposium of Wireless Communication Systems 2005 (ISWCS 2005), Main Symposium, Siena, Italy, 5-7 September 2005.

318.   Supporting Multicast in Ad-Hoc networks in a Hotspot Context, A. Kassler, S. Sargento, A. Ben Mnaouer, C. Lei, P. Neves, R. L. Aguiar, P. Ruiz, 4th Mediterranean Ad Hoc Networking Workshop, France, June 2005.

319.   IPv6 Network Mobility on Ad Hoc Network for Public Transportation Systems, Teck Meng L., Bu Sung Lee, Chai Kiat Yeo, A. Kassler, Boon Chong S., TERENA Networking Conference, Poznan, Poland, June 2005.

320.   Integration of Ad Hoc Networks with Infrastructure Networks – a QoS Perspective, A. Kassler, P. Neves, S. Sargento, R. L. Aguiar, S. Crisóstomo, in Proceedings of the 5th Scandinavian Workshop on Ad Hoc Networks, Stockholm, Sweden, May 2005.

321.   Multicast Protocol Performance of Ad-Hoc Networks in a hotspot context, A.Kassler, A. Ben Mnaouer, C. Lei, Proceedings of the Int. Conf. on Networks and Communication Systems (NCS 2005), Krabi, Thailand, April 2005.

322.   Pervasive Communication for Commuters in Public Buses, A. Kassler, et. al., 2nd International Workshop on Mobile Peer-to-Peer Computing (MP2P'05), March 2005, Hawaii, USA.

323.   Load-sharing in Multi-homed System based on Mobile IPv6, H. Huang, J. Cai, A. Kassler, ICC 2005, Korea, 2005.

324.   Minitrack: Quality of Service in Mobile and Wireless Networks, S. Olariu, A. Kassler, in Proceedings of the 38th Hawaii International Conference on System Sciences, Hawaii, USA, Jan. 2005.

325.   QoS and Multicast aware Integration of Ad-Hoc Networks with Infrastructure networks based on 802.11 and 802.16, A. Kassler, P. Neves, S. Sargento, R. Aguiar, S. Crisóstomo, IEEE SECON, Santa Clara, CA, USA, October 2004.

326.   End-To-End Quality of Service Coordination for Multimedia Applications in Heterogeneous, Mobile Networks, A. Kassler, T. Guenkova-Luy, IEEE Int. Conference on Communications ICC, Paris, France, June 2004.

327.   Providing End-to-End QoS in 4G Heterogeneous Networks, A. Kassler, in Proc. of the HHCCII, Hawaii, USA, Jan, 2004.

328.   Adaptive Multimedia Multi-party Communication in Ad Hoc environments, P. Ruiz, J. Sanchez, E. Garcia, A. Kassler, T. Guenkova-Luy, HICSS 37, Hawaii, USA, January 2004.

329.   Lefteris Mamatas and Vassilis Tsaoussidis, "Differentiating Services for Sensor Internetworking". The IFIP Fifth Annual Mediterranean Ad Hoc Networking Workshop (Med-Hoc-Net 2007), June 2007, Corfu, Greece.

330.   L.Mamatas, V.Tsaoussidis, "A new approach to Service Differentiation: Non-Congestive Queueing", CONWIN 2005, Budapest, Hungary (also presented in 2nd MC meeting of COST-290, Colmar, France, 2005).

331.   L.Mamatas and V.Tsaoussidis, "Protocol Behavior: More Effort, More Gains?". PIMRC 2004, Barcelona, Spain.

332.   Ioannis Psaras, Vassilis Tsaoussidis, Lefteris Mamatas. "CA-RTO: A Contention Adaptive Retransmission Timeout", International Conference on Computer Communications and Networks, ICCCN 2005, San Diego, California, USA.

333.   P. Papadimitriou and V. Tsaoussidis "Evaluating TCP Mechanisms for Real-Time Streaming over Satellite Links", 4th IEEE Int/nal Conference on Wired/Wireless Internet Communications (WWIC 2006), Bern, Switzerland, May 2006.

334.   Ioannis Psaras, Vassilis Tsaoussidis "The TCP Minimum RTO Revisited", IFIP NETWORKING 2007, Georgia Tech Hotel, Atlanta, GA, USA.

335.   Ioannis Psaras, Vassilis Tsaoussidis "WB-RTO: A Window-Based Retransmission Timeout for TCP", GLOBECOM 2006, Control and Management of High Performance Networks, San Francisco, California, USA.

336.   Martin Waldburger, Burkhard Stiller: Regulatory Issues for Mobile Grid Computing in Europe. 18th European Regional ITS Conference (ITS 2007), pages 1-10, Istanbul, Turkey, September 2007.

337.   Martin Waldburger, Burkhard Stiller: Legal Compliance in Commercial Service Provisioning Across Administrative Domains. 13th EUNICE Open European Summer School and IFIP TC6.6 Workshop on Dependable and Adaptable Networks and Services (EUNICE 2007), pages 1-8, Enschede, The Netherlands, July 2007.