IEEE Communications MAGAZINE

March 2014

ICUMT 2013 Congress in Almaty, Kazakhstan

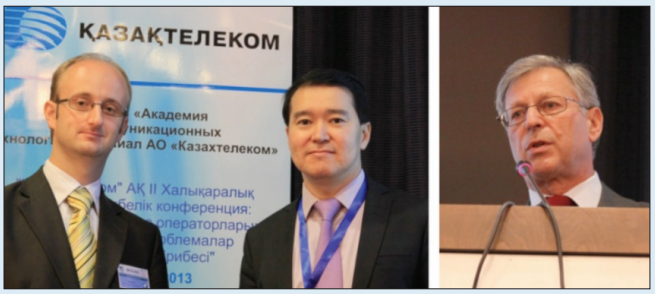
By Yevgeni Koucheryavy, Finland; Bibigul Magauova, Kazakhstan; Jacek Rak, Poland; James P.G. Sterbenz, United States; and Alexey Vinel, Sweden

Almaty in Kazakhstan was the city hosting ICUMT 2013, the 5th International Congress on Ultra Modern Telecommunications and Control Systems. The event was organized on September 10-12, 2013 by JSC Kazakhtelecom (being a leading telecommunications operator in Kazakhstan), and Tampere University of Technology in conjunction with the 2nd Research and Practice Conference of JSC Kazakhtelecom "Fixed telecommunication operators: innovation technologies, problems and operational experiences". Technical cosponsorship of ICUMT 2013 was provided by the IEEE Communications Society Russia Northwest Chapter and JSC "Kazakhtelecom".

Similar to previous editions, ICUMT 2013 consisted of two tracks, namely: Telecommunications, and Control Systems. It offered two specialized workshops: RNDM (Reliable Networks Design and Modeling), and FOAN (Fiber Optics in Access Networks).

Technical Program of ICUMT 2013 was formed by 50 papers carefully selected after a detailed review process (acceptance ratio of ICUMT 2013 papers was 39.1%), published in IEEE Xplore. The most important research topics included: next generation wireless systems, services and protocols; green communications; low-layer wireless technologies; pervasive computing and smart environment; and Intelligent Transportation Systems.

Apart from the technical program, ICUMT 2013 offered a rich social program including the Social Day on September 11, 2013, Welcome Reception, Regional Gala Dinner, Farewell Yurt Dinner (in a traditional Kazakh tent), as well as excursions to Lake Issyk in the mountain area of IleAlatau National Park, and to the Charyn Canyon.



Left to right: Jacek Rak, ICUMT 2013 Telecommunications Track Co-chair; Batyr Makhanbetazhiev, ICUMT 2013 General Co-chair; and Jozef Wozniak delivering his keynote talk.

In the context of the Kazakhtelecom conference, the wide range of issues was discussed, including the problem of traffic growth, falling ARPU, the outflow of voice traffic and the effectiveness of the existing business models of fixed telecommunication operators. Telecommunication operators introduced a future network concept that combines business, mass and mobile services for offering low-cost and easy-to-use highly reliable network. Consulting companies proposed new business models with examples and ways to monetize the user traffic.

The final program of the congress was enriched by three keynote talks: by Hanna Bogucka, Poznan University

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Left to right: a group photo of ICUMT 2013 participants, Best Paper Award ceremony (Jacek Rak, ICUMT 2013 Telecommunications Track Co-chair, Simon Schröter and Krzysztof Szczypiorski - recipients of the award, and James P.G. Sterbenz - ICUMT Steering Committee Member).

IEEE HEALTHCOM 2013
15th IEEE International Conference on e-Health Networking, Application and Services

By Joel J.P.C. Rodrigues, General Chair, University of Beira Interior, Portugal

The 15th IEEE International Conference on e-Health Networking, Application and Services (IEEE HEALTHCOM 2013) was held in Lisbon, the beautifull capital of Portugal, October 09-12, 2013. IEEE HEALTHCOM is the flagship conference of the IEEE Communications Society Technical Committee on eHealth. IEEE HEALTHCOM 2013 is fully sponsored by the IEEE Communications Society and technically sponsored by the following recognized institutions: University of Beira Interior, Portugal; Instituto Superior de Ciências Sociais e Politicas, University of Lisbon; Instituto de Telecomunicações, Portugal; Next Generation Networks and Applications Research Group (IT-UBI); CTTC - Centre Tecnològic de Telecomunicacions de Catalunya, Spain; CI2 – Centro de Investigação e Criatividade em Informática, Portugal; and the Projects AAL4ALL – Ambient Assisted Living for All, an anchor project from the Health Cluster Portugal, and WSN4QoL – Secure Location-Aware Cooperative Network-Coded WSNs for Better Quality of Life – an FP7 Project.

The conference offered an excellent program addressing the new frontiers of eHealth technologies and brought together experts from all over the world to share their expertise and new ideas. Thanks to authors from the most diverse research areas including nurses, physicians, technologists, social scientists, lawyers, and other professionals. We received contributions from 51 countries and a total of 286 papers submitted for the main conference. The acceptation ratio is below 45%.

This year's conference featured 20 Technical sessions and two poster Sessions; three workshops (the International Workshop on New Trends on Telemedicine (NTT 2013); the First International Workshop on Service Science for e-Health (SSH 2013); and the 1st International Workshop on Active and Healthy Ageing (AHA 2013); four tutorials (Methodology for Evaluating Experience of Mobile (Healthcare) Applications Used in Different Contexts of Daily Life; Health Care Collaborative Networked Organization; Introduction to openEHR – Main Concepts, Tools and Archetype/Template Creation; Designing an Information Accountability Framework for eHealth); several live demos in a demo session (robotic surgeries; demos from the AAL4ALL project; and tele-consulting); a large industry Exhibition with key players on eHealth technologies; and a plenary session addressing key topics related to eHealth. The conference closed with the presence of the Portuguese Minister of Health, Paulo Macedo.

We would like to highlight the excellence of the four keynote speeches and two panels. The keynote speeches addressed the following topics:

- The Challenge of Big Data in Health: Meaningful Use of Information for Patient Centered Care, by Márcia Ito, IBM Research Brazil.
- Disaster Communications after the Accidents of the Fukushima Nuclear Power Plant (Japan), by Isao Nakajima, Tokai University and Fukushima Nuclear Accident Independent Investigation Commission of the National Diet.
- eHEALTH in Europe, by Henrique Martins, SPMS Portuguese Ministry of Health, President; University of Beira Interior, Portugal.
- Transparent Robot-Assisted Gait Training in Neurorehabilitation, by Heike Vallery, TU Delft, Netherlands.

The panels addressed key and challeging topics on eHealth and received much attntion by the audience. The first panel, entitled Telemedicine Today! led by Luis Gonçalves, Telemedicine Working Group, Portuguese Ministry of Health, Portugal, and the second, addresing the topic Cloud or not to Cloud for eHealth, led by Masum Z Hasan, Technology Director, Cisco, USA.

The conference also promoted a social program includ-

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The 9th IEEE Broadband Wireless Access Workshop Co-Located with IEEE Globecom 2013

By Patrick Marsch, Nokia; Andreas Maeder, NEC Laboratories Europe; Arun Ghosh, AT&T Labs; Giridhar K, IIT Madras; Peter Fertl, BMW Group Research & Technology; Thomas M. Bohnert, Zurich Univ. of Applied Sciences; Dirk Staehle, DOCOMO Europe; Gabor Fodor, Ericsson

The 9th International Workshop on Broadband Wireless Access (BWA), in co-location with IEEE Globecom 2013 in Atlanta, US, marked the successful continuation of what has become the most renowned workshop series alongside IEEE communications conferences. The series aims at bringing together leading experts from academia and industry to discuss the latest research and trends in a particularly focused and interactive way.

The organizing committee of the 9th BWA included:

General Chairs: Patrick Marsch, Nokia Solutions and Networks, and Andreas Maeder, NEC Laboratories Europe.

TPC Chairs: Arun Ghosh, AT&T Labs, Giridhar K, IIT Madras, and Peter Fertl, BMW Group Research & Technology.

Steering Committee: Thomas M. Bohnert, Zurich Univ. of Applied Sciences, Dirk Staehle, DOCOMO Communications Laboratories Europe, and Gabor Fodor, Ericsson Research.

This year the workshop attracted 85 paper submissions, out of which 31 were accepted for publication, yielding an acceptance ratio of 36%. With about 50 participants, the workshop was one of the most successful instances since the beginning of the series.

Out of the accepted papers, 20 were presented in oral form in four technical sessions:

- Novel PHY techniques, e.g. looking into novel multi-carrier techniques, modified OFDM approaches or faster-than-Nyquist signaling.
- Novel MAC techniques, e.g. focusing on scheduling and MAC design in wireless multi-hop or mesh networks.
- Multi-antenna and cooperative communications, investigating interference alignment, millimeter-wave beam alignment, and cooperative relaying.
- Spectrum, cognitive radio, and HetNet, e.g. covering spectrum sensing or power allocation in cognitive networks, or dual connectivity and network selection in heterogeneous networks.

The remaining 11 papers were presented as posters, including short teaser talks, and covering a wide range of topics like SON, context-aware mobility management, demand control, propagation and deployment.

The paper presentations were complemented with five invited speeches from renowned representatives of mobile network operators, network vendors and academia. All speeches were focused on the future of broadband wireless access, in particular the upcoming 5th generation of cellular communications.

In the first speech from Hank Kafka, VP Radio Access & Devices, AT&T, already the title "The Next Next Generation" reminded that just lately LTE was introduced as a next generation — and defined by its abbreviation to be of longer-lasting nature — so that the introduction of yet another generation has to be carefully considered. After highlighting the current data traffic growth and consequent network densification, Hank discussed future network requirements, like increased spectral efficiency, substantially more devices, and lower cost. He touched on potential solutions like massive MIMO or novel PHY and MAC approaches, but emphasized that any non-backward-compatible technology would have to deliver substantial gains in spectral efficiency, throughput and cost to be justified, considering the large recent operator investments into LTE-A.

The next speaker, Bill Payne, VP Small Cells and CDMA, Nokia Solutions and Networks, emphasized the strongly expanded application space beyond 2020. For instance, the Internet of Things, with trillions of connected devices and the usage of wireless connectivity for industrial or vehicular traffic automation, will offer new business opportunities, but also pose severe novel communications requirements, like latency, reliability or strongly reduced device cost and power dissipation. Bill stated that 5G will require both an evolution of existing technologies like LTE-A and Wi-Fi, as well as novel radio access technologies designed to meet the very different nature of future application needs. As examples of such technologies, Bill gave an insight into the novel enhanced local area and mmWave technology NSN has been investigating in the last years.

Gerhard Fettweis, Vodafone Chair Professor, TU Dresden, elaborated in detail on the novel use cases that may define 5G, like user-specifically rendered 3D, augmented reality, industry automation for user-tailored products, and traffic control. He emphasized that 5G will be about using wireless communications not only for content, but also for steering and control, and stated the key 5G requirements as throughput, latency and reliability. Gerhard discussed solutions to meet these requirements, such as generalized frequency division multiplexing (GFDM) as an enabler for lower air interface latency. He concluded his talk by pointing out the interesting future question of where in the infrastructure data and applications should reside in the context of e.g. low latency, and the potential necessity to "hand over" applications between network nodes.

Gabor Fodor, Master Researcher, Ericsson, pointed out that network nodes and devices may converge toward similar complexity, and that we will see much more transmission modes beyond 2020, including e.g. device-to-device communication. He emphasized that 5G may evolve from the classically decoupled concepts of uplink and downlink to an optimization of two-way communication incorporating network coding and network information theory. Gabor also touched on various other research fields of Ericsson, like massive MIMO, shared spectrum access and mmWave technology.

Chih-Lin I, Chief Scientist Wireless Technologies, China Mobile Research Institute, put an emphasis in her speech on the aspect of energy efficiency, and highlighted the paradigm change from designing wireless communications for optimized spectrum efficiency to jointly optimized energy efficiency and spectrum efficiency. She considered

BROADBAND WORKSHOP/*continued from page 3*

"Green and Soft" as the key words for BWA in the future. Specifically, she highlighted five key focus areas in China Mobile's research effort: Rethink Shannon, Rethink Ring and Young, Rethink Signalling and Control, Invisible Base Stations, Small Cell New Spectrum. Chih-Lin also spoke about massive MIMO and Full Duplex as topics of interest for 5G, and provided some detailed considerations on an irregular antenna array her institute is designing.

The workshop was concluded by a panel discussion among the invited speakers, moderated by Patrick Marsch from Nokia Solutions and Networks. It started with the question: which future application requirements would justify novel, non-backward-compatible wireless technologies. The panelists agreed on latency as a clear case, while reliability may be achieved through an evolution of existing technology. Also the need for device-to-device communications was stated, but here the operators commented that the business case behind this was not clear yet. Regarding expected technology disruptions, the panelists concluded that air interface modifications, mmWave technology, system architecture and protocol stack, would be most likely fields. The speakers then elaborated on whether there can be a "one-size-fits-all" approach in 5G, able to address all requirement dimensions of throughput, latency, reliability and power/cost, or whether there will be technologies optimized for specific use cases. Nobody was able to precisely answer this question, but the operators emphasized the need for compelling business cases to justify dedicated radio access technology only for some use cases. After venturing into the topic of spectrum usage, the panel was concluded with an outlook on how the wireless communications ecosystem may change beyond 2020. For instance, it was discussed that network vendors may face the challenge of moving toward a consumer market as the number of base stations starts equalling that of devices, but that edge computing may be a novel business opportunity for both network vendors and network operators.

At this point, we would like to express our sincere gratitude to all persons who have made this workshop a great success, such as the Technical Program Committee which has mastered a total of 255 paper reviews, Matthieu Bloch, Kwang-Cheng Chen, and John Barry, as the overall workshop chairs for Globecom 2013, who have been very responsive and supportive, as well as the session chairs and invited keynote speakers and panelists.

HEALTHCOM 2013/*continued from page 2*

ing the welcome reception that took place at the conference venue, lunches, a conference banquet at the historial area of Belém (at the cultural centre of Belém) just close to the Tagus river, and offered participants the opportunity to visit the beautiful city of Lisbon and its surroundings.

It is my privilege to convey the community's gratitude to the exhibitors and the conference patrons, namely, Portugal Telecom (gold patron); Carestream and Siemens (silver patrons); ALTRAN, ONI Telecom, ORAMIX – Expert Services, PROSIDE, and RIZI – Expert Software Solutions (bronze patrons); Everis, Linde Group, and Maxdata (session patrons); and HP (bags patron). A special thanks goes to the Ministry of Health for its permanent support, as well as all the sponsors and patrons.

More information about IEEE HEALTHCOM 2013 may be found at http://www.ieee-healthcom.org/2013/, and a short video about the event can be visited here: http://www.youtube. com/watch?v=JdBwcB3oqag.

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of Technology, Poland, "Green communications in white spaces"; Sergey Afanasiev, AMT Group, Russia, "Contemporary challenges and development trends of telecom operators"; and Jozef Wozniak, Gdansk University of Technology, Poland, "Comparative analysis of efficiency of IP traffic handover mechanisms in IEEE 802.11 wireless local area networks".

The best paper award was given to Simon Schröter, Robert Weigel, and Georg Fischer (Germany) for the paper entitled "Employing evolutionary optimization for designing practical beamsteering algorithms for the uplink of UMTS with transmit power control bits as feedback", as well as to Szymon Grabski and Krzysztof Szczypiorski (for the paper "Network steganalysis: detection of steganography in IEEE 802.11 wireless networks").

The next (sixth) edition of ICUMT will be organized in St. Petersburg, Russia on October 8-10, 2014. Please visit http://www.icumt.org for more information.

IEEE Communications MAGAZINE

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A publication of the
IEEE Communications Society