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## CONFERENCE REPORT

## The 14th IEEE International Conference on Communication Systems (ICCS), 19-21 November 2014, Macau, China

By Koichi Adachi, ICCS 2014 Publicity Chair

The 14th IEEE International Conference on Communication Systems (ICCS 2014) was successfully held in Macau, China, from 19–21 November 2014. It was co-organized by the IEEE Communications Society Singapore Chapter, the IEEE Vehicular Technology Society Singapore Chapter, and the IEEE Singapore Section, and technically co-sponsored by the IEEE Communications Society and the IEEE Macau Section. Started in Singapore in 1988, the IEEE ICCS has been a biennial conference providing a platform to researchers from both academia and industry to exchange the state-of-the-art communications technologies over two decades.

The organizing committee of IEEE ICCS 2014 includes academics and researchers from both Singapore and Macau. The key members consist of General chair, Prof. L. Wong (NUS, Singapore); General co-chairs, Dr. Y.-C. Liang (I2R, Singapore) and Dr. Benjamin Yue (CEM, Macau); TPC chair, Prof. T. J. Lim (NUS, Singapore); and TPC co-chairs, Prof. J. Q. Li (MUST, Macau) and Dr. S. Sun (I2R, Singapore).

IEEE ICCS 2014 showcased a technical program consisting of 24 technical sessions, covering many exciting aspects of wireless communications, optical communications, devices, and new emerging technologies. Among the 24 technical sessions, 11 were special sessions, organized by distinguished researchers in their respective areas, on current hot topics in communications and networking, featuring well known speakers sharing their latest discoveries. The topics covered by the special sessions and the regular sessions include machine-to-machine/device-to-device (M2M/D2D) communications, cognitive cellular networks, 5G wireless communications, green wireless communications, signal processing for wireless and optical communications, network economics, cyber security, and so on. A total of 151 submissions to the open call were received from more than 20 countries and territories, with 69 papers accepted after a rigorous and challenging technical review process. Each paper was peer reviewed by at least three independent reviewers.



Conference banquet and award ceremony.



Opening addresses from General Co-chairs by Dr. Ying-Chang Liang (left) and Dr. Benjamin Yue (right).



Keynote speeches by Mr. Seizo Onoe (left), Prof. Kwang-Cheng Chen (center), Prof. Shinji Shimojo (right).

IEEE ICCS 2014 featured three keynote talks. The first keynote talk, entitled "Eternal Evolution Toward 5G and Beyond", was delivered by Mr. Seizo Onoe, the Chief Technology Officer (CTO) of NTT DoCoMo, Japan, on the first day of ICCS 2014. The second keynote talk, titled "Networking and Computing for Internet of Things", was brought to the audience by Prof. Kwang-Cheng Chen from National Taiwan University, Taiwan on the second day, 20 November 2014. The third keynote talk, given on the third day by Professor Shinji Shimojo from Osaka University, Japan, focused on future Internet, titled "Future Internet: Managing Innovation and Testbed".

The conference banquet was held on the second day at the restaurant in the conference venue to promote the social interaction among the attendees. The award ceremony was also held during the conference banquet. The Best Paper Award was given to "Matrix Optimization Problems for MIMO Systems with Matrix Monotone Objective Functions", authored by Chengwen Xing (Beijing Institute of Technology and University of Hong Kong, P.R. China), Shaodan Ma (University of Macau, P.R. China), and Yiqing Zhou (Chinese Academy of Science, P.R. China). The Best Student Paper Award was given to "SOAR: Strategy-Proof Auction Mechanisms for Distributed Cloud Bandwidth Reservation", authored by Yang Gui, Zhenzhe Zheng, Fan Wu, Xiaofeng Gao, and Guihai Chen (all from Shanghai Jiaotong University).

This is the second time that ICCS was held outside Singapore, and it attracted more than 120 participants from the Asia Pacific Region as well as from Europe and North America. IEEE ICCS 2014 was a very successful event, thanks to the active participation and involvement from the authors, TPC members, and attendees, and strong support from colleagues from Macau.

The IEEE Communications Society Singapore Chapter and IEEE Vehicular Technology Society Singapore Chapter are now planning to host the next IEEE ICCS in November 2016.

## The First IEEE Communications Society Summer School, Trento, Italy, July 6-9, 2015

By Fabrizio Granelli, DISI – University of Trento, Italy

Membership services are of paramount importance for IEEE ComSoc, and especially involving younger members, they represents a big challenge. With the Education Board, we addressed young engineers with several small outreach activities targeted to high schools and universities, mainly in conjunction with other Chapters' activities or major ComSoc flagship events (IEEE ICC, Globecom, etc.).

The idea to organize a ComSoc Summer School for our Ph.D. student members was originally conceived by IEEE ComSoc President Prof. Sergio Benedetto as well as Prof. Khaled Letaief, Vice-President of Technical Activities, Prof. Stefano Bregni, Vice-President of Member Relations, and Prof. Michele Zorzi, Director of Education.

I'm honored that my university in Trento was chosen for the first edition of this event, as I believed that the city of Trento, the educational, scientific, financial, and political center of Northeastern Italy, could effectively offer the ideal launching point for the first IEEE Communications Society (ComSoc) Summer School. Indeed, Trento is recognized throughout the country for its high quality of life, prosperous business opportunities, and advanced research centers, and it hosts one of the youngest and most modern universities in Italy. The University of Trento was founded in the 1960s, and its Department of Information Engineering and Computer Science is the second highest ranked ICT department in Italy.

Held July 6-9, the first IEEE ComSoc Summer School provided participants with top-level lectures on hot topics in communications as well as an exciting and unprecedented program, consisting of several site visits and an interactive poster session.

We did our best to select the most promising students from more than 100 applicants during the Spring of 2015, aiming at a good balance between young talents at the beginning of their Ph.D. studies as well as more mature researchers. The result was a heterogeneous class of 43 highly motivated participants from all over the world.

The event started on July 6, with the introductory talks given by the Rector of the University of Trento, Prof. Paolo Collini; Head of the Department of Information Engineering and Com-



Opening session: introduction by the Rector of the University of Trento, Paolo Collini. From left to right: Stefano Bregni (IEEE ComSoc VP Member Relations), Gian Pietro Picco (Head of the Dept. of Information Engineering and Computer Science, DIEC, Univ. of Trento), Paolo Collini, Fabrizio Granelli (Head of the IEEE ComSoc Education Board Training Working Group, DIEC, Univ. of Trento).



Poster session.

puter Science (host and co-founder of the initiative), Prof. Gian Pietro Picco; the ComSoc VP of Member Relations, Prof. Stefano Bregni; and myself as the Head of the ComSoc Education Board Training Working Group and local organizer of the event.

The technical program started after a short break with an interactive lecture on "Collaborative Near-Capacity Wireless System Design" by Prof. Lajos Hanzo, University of Southampton, UK.

*(Continued on Newsletter page 4)*



Group photo of students and professors participating to the Summer School.

## Orange: A Romanian Success Story

### An Interview by Nicolae Oaca

Jean Francois Fallacher has been Orange Romania's CEO since July 1, 2011. He is also the president of the BoD. Orange Romania has been a market leader for more than ten years, while in the last four years, under his leadership, its leading market position was consolidated.

Q: Please explain what is behind your success.

JFF: In 2004 Orange became the leader in the Romanian mobile market by offering customers last-generation technologies and reliable services, based on an extensive and performant network.

Many things have happened since I came to Romania: HD Voice, 4G and 4G+, and a multi-screen TV service. Despite the very competitive Romanian market, we remained the customers' first choice by listening to them and investing in both infrastructure and innovative products and services.

In order to stay on top, we pay a lot of attention to the professionals we recruit for our team, people keen on listening to customers' voices and looking to the latest trends. We have been making massive investments in our 4G, 3G, and 2G infrastructures, and we are focusing on value in the market in this digital world.

Q: How about the use of mobile technologies in Romania?

JFF: In recent years, we've invested in a very performant 4G network, already covering 95 percent of the urban population and 67 percent of the entire population. We've also made investments to improve our national 3G+ network. We have by far the largest 4G coverage in the country, mainly in cities, where we saw a greater demand for high mobile Internet speeds. At the same time, we are currently running an extensive network refresh plan to improve our 2G and 3G coverage in cities and rural areas across the country, as well as the mobile data experience for our customers.

Our ambition for the next five years, set through our strategy Essentials2020, is to provide everyone with an unmatched customer experience and allow customers to be connected to what is essential to them. One out of two subscribers buying a subsidized phone from our retail network chooses a smartphone. They need good coverage to keep in touch with their families and friends through voice and SMS, and our investments are going toward them also.

Q: What is Orange's 4G approach for Romania?

JFF: In 2012 and 2013 we massively invested in 4G network preparation and modernization in the cities. In 2013 alone, the level of investments, mainly directed to 4G, was the highest since the beginning of the economic crisis, 30 percent higher than in 2009. Last year we started a new chapter, investing particularly to extend 4G and to offer performant and reliable services regardless of the network, and we also launched the first 4G+ network in Romania, in six cities.

Customers can also enjoy a very rich portfolio of 4G devices for all needs and budgets, 4G services in all our subscriptions, and also a wide range of services like Orange TV Go, Orange Cloud, or Deezer. Orange PrePay customers were the first prepaid users on the market to have access to 4G and the only ones for a long period of time.

The results so far show us that we've made the correct decisions. In the second quarter of 2015, our Internet traffic increased 112 percent compared with 2014, while the number of 4G users reached 600,000. According to the latest ANCOM official statistics, Orange ranked first in the speed tests run in 2015 in the Netograf

app, offering its customers the best download speeds on mobile for indoor locations at 34.15 Mbps, and for outdoor locations at 52.81 Mbps.

Q: How about the Romanian market?

JFF: Compared to other countries where I have been, the quality of the telecom infrastructure in Romania is extraordinary. This is an interesting place for telecom, very competitive and very dynamic. Romania offers high quality Internet services, ranking fifth worldwide on the current Net Index for data transfer speeds, while having among the lowest prices in Europe because of the low wages. Last years' European regulations, as well as local legislation changes, have led to some challenges that affected the entire market.

In the four years I have been at Orange, I have watched the country change in a good way. I came here just after the economic crisis, in the middle of a price war, which seemed normal due to the context. Romanians are open to technology and to what is new. Price remains very important, but the overall experience with an operator has also become a significant factor in the purchase decision, encouraged by the country's recovering economy.

Q: ... and 2015?

JFF: In the entire telecom market, the first quarter's performance was still affected by the interconnection tariff regulations. Starting with the second quarter these effects are becoming weaker, while some special taxes were reduced at the beginning of the year. Therefore, we expect a positive evolution of the market.

2015 started off on the right foot for us. For the first time since the start of the economic crisis in 2009, our half-year revenues increased this year by 1.2 percent to €453.9mn, Romania being a front-runner in our group.

In terms of investments, this year we plan to invest more than €110m in Romania, with plans to invest close to a half billion euros by 2020. Besides a network refresh and 4G consolidation, our investment plan also includes services we have recently launched. For example, Orange TV, which we launched as a multi-screen TV service and the platform with the biggest number of HD channels in Romania, has already gained more than 221,000 subscribers in approximately two years, while the app for smartphones and tablets has been downloaded or upgraded more than 1.3 million times. This year Romania was the first country in our group to launch the Orange TV stick, a portable device transforming any HDMI TV into a smart TV. With this device, customers are able to watch on their TV screen movies and shows from the mobile app, even when they are not at home.

Q: What are the rationales behind the Orange Educational Program (OEP)?

JFF: OEP is one of our oldest social responsibility programs and a good example of how CSR strategy is included in Orange's core business. Besides scholarships for the best students in telecommunications, the program offers participants the chance to complement their theoretical knowledge with practical information offered by Orange employees, as well as get to know the company and make themselves known in the company through internships. Twenty percent of the engineers, experts, and managers working in our technology department, including Stefan Slavnicu, our Chief Technology Officer, are OEP graduates. Moreover, it is the best example of a sustainable program. We are investing in preparing future professionals who will create the technologies of the future. They will be the people who will have this market "in their hands".



Jean Francois Fallacher

## SUMMER SCHOOL/Continued from page 2

talk started by addressing the limitations of MIMO's reliance on co-located array-elements, and then showed how single-antenna-aided cooperative mobiles can circumvent these limitations through the formation of MIMO's with distributed elements, a concept also referred to as Virtual Antenna Arrays (VAA). Then the speech focused on amplify-forward and decode-forward protocols as well as iterative channel coding schemes. Finally, EXIT-chart-aided designs were introduced for creating near-capacity solutions in addition to a range of future research directions and open problems. The session was closed by a comprehensive discussion with the audience about the relationship between the presented subjects and each participant's Ph.D. topic.

An informal dinner at a local pub completed the day, giving the attendees an opportunity to get to know each other better and have discussions in a relaxed environment.

The following day the school hosted Prof. Giuseppe Bianchi from the University of Rome – Tor Vergata, Italy, who delivered a talk entitled "From Dumb to Smarter Switches in Software Defined Networks: Towards a Stateful Data Plane." The seminar was motivated by a crucial shortcoming in today's software defined network architectures, namely the need to mandate the execution of all control tasks to a remote controller, and the relevant emerging concerns in terms of latency and signaling overhead. After a brief overview of software defined networking principles as well as a review of OpenFlow, the talk focused on recent approaches (recent OpenFlow extensions, Reconfigurable Match Tables, Protocol Oblivious Forwarding, etc.) devised to improve data plane programmability on the fast path, i.e. directly inside the switches themselves. In addition, it introduced Open-State, a very recent proposal devised to permit platform-agnostic programmability of stateful tasks.

Then, on Tuesday afternoon a two-hour poster session was held in the open spaces of the Department of Information Engineering and Computer Science. Each participant was instructed to prepare a poster presentation of his/her ongoing and future research plans in order to foster discussion among participants as well as with school instructors and local professors.

The topics were extremely diverse, from signal processing and resource allocation in LTE to green communications, from cooperation to streaming services.

Participants had one free night for sightseeing or additional networking, before the following seminar, which was held on Wednesday morning. Prof. Andrea Goldsmith from Stanford University, USA, presented a four-hour lecture on "The Next Wave in Wireless Communications." She provided the audience with an extensive discussion of multiuser systems, a survey of current cellular systems and a review of future expectations. The speech then focused on ad hoc wireless networks and on secondary user access in the framework of cognitive radio networks.

Finally, Prof. Goldsmith introduced the issues related to object connectivity (sensors, battery-limited devices) to the Internet, opening a discussion of green wireless networks and the ways to save or harvest power for communications. The session ended with additional hot topic examples and transversal areas of application of communications theory (e.g. neural science).

The Summer School included specific sessions enabling participants to understand the actual problems and technology in the field of communications. To this aim, practical sessions were held on Tuesday and Wednesday and included visits to the datacenter of the University of Trento and to the local network provider, Trentino Network and its Network Operation Center.

Prof. Nelson L.S. da Fonseca of the State University of Campinas, SP, Brazil, closed the event with a seminar on "Networking for Big Data". The seminar started with a discussion of the Big Data ecosystem, perspectives on society and science and processing capabilities. Prof. Fonseca introduced network virtualization as a fundamental pillar to networking support for the Big Data area, as well as research opportunities not only in networking for Big Data but also in Big Data for networking. Participants were provided with lab exercises to practice on their way back home.

Summarizing, the Summer School was a challenging and exciting event. Considering the feedback I collected from the attendees and the speakers, I'm very proud of the outcome, and I believe it could pave the way to becoming an integral and permanent component of the yearly events organized by the IEEE Communications Society for its members.

For additional information on the IEEE ComSoc Summer School, please visit <http://www.comsoc.org/summer-school>.

### OMBUDSMAN

#### COMSOC BYLAWS ARTICLE 3.8.10

The Ombudsman shall be the first point of contact for reporting a dispute or complaint related to Society activities and/or volunteers. The Ombudsman will investigate, provide direction to the appropriate IEEE resources if necessary, and/or otherwise help settle these disputes at an appropriate level within the Society....."

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