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DISTINGUISHED LECTURE TOUR

## DLT on Photonic Network of Tetsuya Kawanishi in Bandung, Indonesia

By Arief Hamdani Gunawan, Telkom Indonesia

On 21 February 2015, IEEE R10 Industry Relations initiated the IEEE Distinguished Lecture on Photonic Networks at Telkom University, Bandung. The activity that is also strongly supported by the IEEE Indonesia Section as well as the IEEE Communications Society Indonesia Chapter provides fertile conditions for engineering since government, industry, and academia support it.

The IEEE Distinguished Lecturer on Photonic Networks was Dr. Tetsuya Kawanishi, an IEEE Fellow and Director of the Lightwave Devices Laboratory, NICT. The other speakers are Dr. Denny Setiawan, Dr. Atsushi Kanno, Dr. Yusuf Nur Wijayanto, and Dr. Ismudiati Puri Handayani.

The first speaker, delivering the keynote, was Dr. Denny Setiawan, Head of the Fixed and Land Mobile Services Group, Directorate of Spectrum Policy and Planning, Directorate General of Resources and Standards, Ministry of Communications and IT, Republic of Indonesia. The topic was 'Accelerating Broadband Penetration in Indonesia.' The keynote also highlighted the importance of radio over fiber (RoF). After the keynote there were three topics related to activities of the National Institute of Information and Communications Technology (NICT), Japan: an overview of the Photonic Network Research Institute; seamless convergence of optical and radio technologies; and high functional electrical-to-optical conversion. There was also one topic from Telkom University.

Dr. Tetsuya Kawanishi, an IEEE Fellow and Director of the Lightwave Devices Laboratory, NICT, discussed the progress of photonics technology to realize high-speed and high-precision signal transport for future networks. Actually, future high-speed communication technology requires drastic improvement of the preciseness of optical signal generation and detection; advanced optical modulation techniques with higher order multi-level modulation is relayed on the precise optical modulator. High extinction ratio optical modulator with an extinction ratio up to 70 dB, which was developed by the NICT, is capable of advanced optical networking as well as precise clock distribution for radio astronomy and high-precision radar system for surveillance of airport runways.

Dr. Atsushi Kanno, Senior Researcher at the laboratory, showed a possible solution for realization of seamless convergence of optical and radio networks using radio over fiber (RoF) technology. The seamless conversion helps realize functionality of the link including possible reduction of transmission latency in the entire link. RoF technology also realizes direct signal conversion between the optical and radio signals in the millimeter-wave band and even the terahertz wave band. Thus, high-speed wireless signal transmission with capacity comparable to that in advanced optical communication is realized by a coherent RoF

technology, which is comprised of a high-speed digital signal processing diverted from the recent optical digital coherent technology and the RoF technique.

Dr. Yusuf Nur Wijayanto, a researcher at the laboratory, presented the high-speed electrical-to-optical signal converter realized by a lithium niobate optical modulator directly equipped with antennas on the substrate. In general, the optical modulator connected with the antennas has relatively large loss by connecting the transmission lines between the electrode of the modulator and the antenna, especially in high frequency radio signals. Dr. Wijayanto performed patch antenna array direct loaded on optical waveguides in the lithium niobate modulator. The technology is capable for direct conversion from high-speed and high-frequency radio signals to an optical signal. Additionally, the array antenna has the other function: to detect incident radio direction for applications to directional wireless communication, sensing, and radar.

Dr. Ismudiati Puri Handayani from Telkom University presented Ultrafast dynamics in TbMnO<sub>3</sub>. Demand on high speed data transmission in communication requires ultrafast optical switching, which involves compatible devices exhibiting ultrafast response time. In this respect, it is crucial to explore the dynamics of material response time under light illumination. The electron dynamics might involve other degrees of freedom, such as spin and lattice, which subsequently determine the characteristics of excited electron relaxation time. In the study, time resolved optical spectroscopy is used to elucidate the dynamics of photo excited electrons in TbMnO<sub>3</sub>, a multi-ferroic material with the Néel temperature  $T_{N,1}$  of 41 K and ferroelectric phase transition,  $T_{N,2}$  of 26 K. A 3.1 eV light, which corresponds to oxygen to manganite charge transfer, is used to create free electrons while the 2 eV light is used to probe the transient responds. The fast response time is observed in the order of 30 ps. The result is interpreted as the relaxation of doped spin-aligned carriers in the presence of an underlying magnetic lattice in TbMnO<sub>3</sub>. The transient responses while probing d-d intersite transitions show marked differences along different crystallographic directions, which are discussed in terms of the interplay between the processes of hopping of the photo-injected electrons and the magnetic order in the material.



Dr. Tetsuya Kawanishi, IEEE Fellows and Director of the Lightwave Devices Laboratory, NICT delivered the progress of the photonics technology to realize high-speed and high-precision signal transport for future network.

## DLT of Koichi Asatani to Montréal, Canada

By: Mouhamed Abdulla (U. Québec), Anader Benyamin-Seeyar (Concordia U.), and Fabrice Labeau (McGill U.)

On Feb. 18, 2015 we had the great pleasure to welcome Prof. Koichi Asatani to the IEEE Montréal Section in Canada, visiting us from his hometown in Kyoto, Japan. Prof. Koichi is no stranger to the IEEE ComSoc community, given his involvement in various leadership positions, the most recent one as the IEEE ComSoc Membership Programs Development (MPD) Director. In brief, he is an IEEE Fellow, IEICE Fellow, Professor Emeritus at Kogakuin U. (Tokyo, Japan), Chair Professor at Nankai U. (Tianjin, China), founder of the QoS Series Symposium at ICC and GLOBECOM, an Executive Chair for ICC'11 (Kyoto, Japan), and three times an IEEE ComSoc Distinguished Lecturer (DL): 2006-2009, 2011-2012, and 2013-2014. Moreover, he is a well-known speaker, and among other areas of proficiency in communications, he is an expert on Gigabit fiber optic networks, such as FTTH and G-PON.

Given the interest of our local membership in his research area and his expertise, it was only natural for us to invite Dr. Asatani to visit our Section. The idea then grew from a stand-alone DL event into a wider North American (NA) Tour (DLT), where Dr. Asatani would present his latest research in various cities across Eastern Canada and the U.S. With this idea in mind, we were pleased that the various NA ComSoc Chapters showed their interest in this initiative. But most importantly, we were delighted that Dr. Asatani was gracious enough to accept this multi-site traveling and lecturing commitment.

To begin his journey, Dr. Asatani left Tokyo on Feb. 17 and arrived on the same day in Montréal. The seminar was held on Feb. 18 from 6-8 pm EST at the Engineering Building of Concordia U. located in downtown Montréal. Despite the very cold temperature and heavy snow storm in Eastern Canadian, the event was a huge success, attracting more than 40 attendees. This is in part due to a strong advertising campaign on diverse platforms, including: IEEE vTools, IEEE eNotice Service, IEEE Montréal LinkedIn Group, Chapter membership drive, and of course Twitter. Moreover, personal emails were sent to local scholars, professionals, and graduate students via SYTACom, which is a collaborative center for telecommunications research in the province of Québec. The audience was diverse and composed of faculty members, post-doc researchers, and Ph.D. students from Concordia U., McGill U., U. Québec, U. Montréal, and INRS. We also had participants from the Canadian government (NRC-IRAP), and various national and multinational telecommunication companies, including Cisco Systems, Cogeco, and Fonex.

The title of Dr. Asatani's talk was "Trends and Issues of FTTH and G-PON" (slides: [http://drmoie.org/ieee/KoichiTalk\\_2015.pdf](http://drmoie.org/ieee/KoichiTalk_2015.pdf)). In short, Dr. Asatani succeeded in motivating the audience, by explaining the fundamentals, requirements, and regulatory aspects of Fiber-to-the-Home (FTTH) and Gigabit Passive Optical Networks (G-PON). He also made interesting remarks and predicted that FTTH broadband technology will eventually replace ADSL as the next-generation network due to its high-throughput range in the Gbps range. Furthermore, he discussed global developments, the future of FTTH and G-PON standardization activities, and technological trends. He answered many interesting questions, with exchanges and follow-up discussions, which were effectively answered by Prof. Asatani.

In addition to the technical component, from the start to the end of the talk, Dr. Asatani made the seminar friendlier by sharing some cultural aspects of the great Japanese tradition. The audience was surprised to learn that in addition to being a top



IEEE Montréal ComSoc Chapter Chair, Dr. Anader Benyamin-Seeyar presenting a symbolic gift to Dr. Koichi Asatani thanking him for his lecture.



Dinner after seminar, left to right: Dr. Koichi Asatani, Dr. Anader Benyamin-Seeyar (Concordia U.), and Dr. Mouhamed Abdulla (U. Québec).

scholar and a successful professor, he is also a black-belt 7th Grand Master and a Karate instructor. In fact, he still trains martial art students once a week. He is indeed a remarkable telecom professor and well achieved personality!

As shown in the top photo, Dr. Asatani received a token of appreciation and a memorable gift for his visit and for offering a stimulating talk. We then distributed feedback sheets to anonymously evaluate the quality of the event. It was echoed by the respondents that Prof. Asatani's talk was very interesting, informative, and highly resourceful. Following the seminar, we also had the opportunity and pleasure to entertain Dr. Asatani for a dinner where we discussed various technical, administrative, and social issues relevant to the ComSoc community. A snapshot of this moment is shown in the bottom photo.

Montréal was Dr. Asatani's first stop in a series of North American destinations. The next day, Feb. 19, he gave another talk in Québec City at Laval University. He then traveled to the St. Maurice Section and made a presentation on Feb. 20 at UQTR. On Feb. 21 he returned to Montréal and continued his journey to Austin, Texas. Dr. Asatani then delivered three lectures in the US: on Feb. 23 in Austin, on Feb. 24 in San Antonio, and finally on Feb. 25 in New Orleans. On Feb. 26 he headed back to Tokyo and safely returned home the day after.

On behalf of the IEEE Montréal Section, we would like to publicly highlight, acknowledge, and thank Prof. Koichi Asatani for his total dedication, efforts, and instrumental role within IEEE ComSoc. Also, we would like to sincerely thank Mr. Fawzi Behmann, the NA DLT/DSP Coordinator, for his hard work preparing Prof. Asatani's visit from Japan to six North American ComSoc Chapters over 10 days. The task was not simple, but he took great care to arrange the travel plans and synchronized the sequence of events with all the Chapter Chairs in a detailed and precise manner. Many thanks Mr. Behmann!

## Tenth Anniversary of RATEL, Serbia

By Milan Jankovic, RATEL, Serbia, and Nicolae Oaca, Romania

RATEL, the Regulatory Agency for Electronic Communications and Postal Services of the Republic of Serbia, celebrated its 10th anniversary on April 23, 2015, with the participation of the representatives of the regulatory bodies from the EU member countries, candidate countries, as well as from the Central and Eastern Regional Working Group – Bulgaria, Macedonia, Albania, Turkey, Poland, Montenegro, Slovenia, and Croatia – which shared their experiences in regulating their markets. Dr. Milan Jankovic, CEO and Director of RATEL since 2006, presented the highlights of RATEL's activities in the past 10 years. RATEL, and mainly Dr. Milan Jankovic, played a crucial role in establishing and running the Central and Eastern Regional Working Group (<http://www.ceeregionalworkinggroup.net>) which put together interests in our region. One of the main aims of RATEL is to put the Serbian telecommunications market in line with the EU requirements, in preparation for its admission to the EU.

### THE CURRENT SERBIAN MARKET, AND THE PRIME ACCOMPLISHMENTS OF RATEL

**The Telecom Market by Year-End 2014:** The total revenues generated by the Serbian telecom market in 2014 were €1.62 billion, or 4.5 percent of country's GDP. Mobile telephony contributed 58 percent, fixed telephony 22.4 percent, Internet 11 percent, media content distribution 8 percent, and VoIP 0.1 per-



Group photo of participants on RATEL's tenth anniversary.

cent. The investments in the telecom sector amounted to €186 million. A comparative overview of the number of users and penetration rate for the public fixed communication network, public mobile communication network, Internet, and cable systems for 2012, 2013, and 2014 is given in Table 1. Among them, Internet usage has the fastest growth due to the existing high speed networks and competition.

**Market Analysis and SMP Operators:** Following the public consultation procedure on the report on the analysis of the wholesale market for call termination on the public telephone network, RATEL adopted a Decision on 29 December, 2014, designating SMP operators and imposing obligations. The next round of the

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	2012		2013		2014	
	Number (thousands)	Penetration (%)	Number (thousands)	Penetration (%)	Number (thousands)	Penetration (%)
Fixed lines	2,990.1	41.29	2,938	40.91	2,856.1	39.96
Mobile users	9,137.9	126.19	9,198.7	128.09	9,344.98	130.76
Internet subscribers	5,038.9	69.26	5,691.6	79.25	6,191.52	86.63
Cable subscribers	1,442.2	19.92	1,552.5	21.62	1,497	20.95

\*Source: RATEL

**Table 1.** A comparative overview of the number of users of the basic electronic communication services in the last three years.

### ComSoc 2015 Election: Take Time to Vote

Ballots were e-mailed and/or postal mailed 29 May 2015 to all Higher Grade\* IEEE Communications Society Members and Affiliates (excluding Students) whose memberships were effective prior to 1 May 2015. You must have an e-ballot or paper ballot before you can vote.

**Vote Now** using the URL below. You will need your IEEE Account username/password to access the ballot. If you do not remember your password, you may retrieve it on the voter login page.

<https://eballot4.votenet.com/IEEE>

If you have questions about the IEEE ComSoc voting process or would like to request a paper ballot, please contact [ieee-comsocvote@ieee.org](mailto:ieee-comsocvote@ieee.org) or +1 732 562 3904.

If you do not receive a ballot by 30 June, but you feel your membership was valid before 1 May 2015, you may e-mail [ieee-comsocvote@ieee.org](mailto:ieee-comsocvote@ieee.org) or call +1 732 562 3904 to check your member status. (Provide your member number, full name, and address.)

Please note IEEE Policy (Section 14.1) that IEEE mailing lists should not be used for "electioneering" in connection with any office within the IEEE.

Voting for this election closes 24 July 2015 at 4:00 p.m. EDT! Please vote!

\*Includes Graduate Student Members



## Join the ComSoc Conference Chapter Challenge

### Win Up To \$5,000 USD to Fund Your Chapter's Activities and Functions

By Heather Ann Sweeney, IEEE ComSoc Staff

Have you joined the ComSoc Conference Chapter Challenge? There is still time to lead the way and win this year's top prize in the ComSoc Conference Chapter Challenge. As active IEEE ComSoc members, we invite you and your constituents to win up to \$5,000 USD for registering in our society's ongoing flagship and core events. At the end of 2015, the three IEEE ComSoc chapters with the highest percentage of conference registrations per chapter member will be awarded valuable funds for financing anything from educational programs and networking functions to new member drives.

**How to Participate:** It's easy. Just do what comes naturally. Attend ComSoc flagship or core conferences, and enter your chapter code on the registration form under the "If referred by a ComSoc Chapter, please state chapter name" question. Your chapter code is your chapter name plus 2015. For example, Austria Chapter 2015 would be the code for the Austria Chapter. To increase your chapter's chances of winning, attend one or more ComSoc flagship and core conferences, and encourage your fellow chapter members to do the same!

**Prizes:**

1st Place: \$5,000 USD

2nd Place: \$3,000 USD

3rd Place: \$1,500 USD

**Eligibility:** To be eligible to participate in the Challenge, a chapter must have at least one registration to any five ComSoc flagship and core conferences. The remaining conferences include CNS 2015, CSCN 2015, DySPAN 2015, GLOBECOM 2015, SmartGridComm 2015, CCNC 2016, or WCNC 2016. Complimentary registrations will be excluded.

**Duration:** The Challenge runs until December 31, 2015.

**Questions:** If you have any questions on this competition or would like to receive conference promotional material for distribution to your IEEE ComSoc chapter members, please contact Heather Ann Sweeney at [h.sweeney@comsoc.org](mailto:h.sweeney@comsoc.org).

## TENTH ANNIVERSARY OF RATEL/Continued from page 3

market analysis for the remaining markets will take place in 2015.

**Technological Neutrality:** Since 1 January 2015, technological neutrality has been introduced in the 900 MHz and 2100 MHz frequency bands by a RATEL decision.

On 19 February, 2015 RATEL carried out the public bidding process for the issuance of individual licences for the usage of the radio frequencies in the 1710–1780/1805–1880 MHz frequency bands. Upon completion of the public bidding process, individual licences have been awarded to all three existing mobile operators, who made the payment of the one-off licence issuance fee, €7 million each, to the Treasury of the Republic of Serbia. The mobile operators provided the technology-neutral services on 25 March, 2015, so the new generation of mobile communications, 4G, is now available in the Republic of Serbia, enabling better coverage and faster Internet.

The Ministry is drafting rulebooks on minimum conditions for the issuance of the individual licence for the use of radio-frequencies in the 800 MHz frequency band and for the available 5 MHz in the 1800 MHz frequency band.

**Digital Switchover:** The Ministry of Trade, Tourism and Telecommunications adopted the Rulebook on the Transition from Analogue to Digital Terrestrial Television Broadcasting and Access to Multiplex ("Official Gazette of RS," no. 86/14, 18/15 and 30/15). This Rulebook defines frequency channels for the first three multiplexes, procedure for accessing multiplexes, further development of the Initial Network (experimental network for the new technology), as well as the Digital Switchover Plan, which defines the timetable for transition from analogue to digital terrestrial broadcasting of the television programs per regions. The date of the analogue switch-off for the first region was 15 April, 2015, while the completion of the digital switchover was set for 17 June, 2015 in line with the international obligations of the Republic of Serbia.

The digital signal of the Initial Network broadcast by the public enterprise ETV covers more than 93 percent of the population. ETV has the obligation to cover at least 95 percent of the population with the programs in the first multiplex, and at least 90 percent for the second multiplex by June 2015.

Additional funds were allocated to the transition to digital terrestrial TV. The negotiations with EBRD were finished in September 2014 with a loan agreement of €24 million for purchasing the equipment for the distribution and broadcasting of the digital terrestrial TV signal, as well as for the reconstruction of 56 locations from which this signal will be broadcasted.

On 19 March, 2015 the Government of Serbia adopted a Decree to establish support measures and requirements for socially vulnerable consumers and the allocation of vouchers for subsidized purchase of equipment for the reception of digital television signals.

**Digital Switchover Finished by 7 June, 2015:** Public promotion of the digital switchover is primarily focused on the electronic media, which are obliged to support the switchover process by informing the citizens about the key issues. It also includes print media, Internet portals, and social networks, and it will also entail direct contact with citizens. This process is led by the Ministry and public service broadcaster (RTS), while the partners in the process are the Regulatory Authority of Electronic Media, RATEL, and all broadcasters (national, regional, and local).

RATEL is also an active member in the international specific entities in order to prepare national telecommunications for the EU. Due to RATEL, Serbian telecoms are now in line with the EU requirements and are waiting for admission, planned for 2020.


GLOBAL  
COMMUNICATIONS  
NEWSLETTER


**STEFANO BREGNI**  
Editor

Politecnico di Milano – Dept. of Electronics and Information  
Piazza Leonardo da Vinci 32, 20133 MILANO MI, Italy  
Tel: +39-02-2399.3503 – Fax: +39-02-2399.3413  
Email: [bregni@elet.polimi.it](mailto:bregni@elet.polimi.it), [s.bregni@ieee.org](mailto:s.bregni@ieee.org)

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**REGIONAL CORRESPONDENTS WHO CONTRIBUTED TO THIS ISSUE**

FAWZI BEHMANN ([FAWZI.BEHMANN@GMAIL.COM](mailto:FAWZI.BEHMANN@GMAIL.COM))  
NICOLAE OACA ([NICOLAE\\_OACA@YAHOO.COM](mailto:NICOLAE_OACA@YAHOO.COM))  
EWELL TAN, SINGAPORE ([EWELL.TAN@IEEE.ORG](mailto:EWELL.TAN@IEEE.ORG))



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