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Generalist or Specialist? Do you care?

− Thoughts from my 37 Years of Research in Radar Remote Sensing −

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1. Introduction

Have you ever asked yourself which you should be—a specialist or a generalist? Most people probably do not think about these terms. In our modern, complex and specialized society, it would seem that there should be more specialists than generalists. In fact, I think most researchers and engineers working at universities, research institutes, and private companies would consider themselves specialists.

In the first half of my life as a researcher, I tried to be a specialist. However, after more than 35 years as a remote sensing researcher, my thoughts are somewhat different. I think that any specialist should have, as one of their areas of expertise, the mentality of a generalist.

The definitions “specialist” and “generalist” may be generally expressed as follows:

Specialist: A person whose professional skills and knowledge are focused on specific area of expertise. They are considered to be better suited for a particular job area such as artist or craftsperson, with skills that are not easily adapted to positions such as a manager who needs to be concerned with many aspects of a project.

Generalist: A person whose professional skills in specific fields will generally be less than the specialist but who has a broad grasp of the components needed for the completion of a process or product. For the generalist, the job is more closely coupled to a view of society as a whole and a philosophy of the business.

In this article, the meanings of these terms are similar to those given above, except that I would like to note that those of us who are engineers and scientists need a “generalist” point of view regarding the impact of new ideas and technology on society. I understand that there are a variety of research styles depending on one’s research focus and/or job environment, so my comment here may not be applicable in all cases. Nevertheless, I would be happy if this article based on my personal experience is of some help to the people interested in this question.

2. Outline of My Research Career: From Communication to Remote Sensing

After graduation with my Master’s degree, I began work at the Radio Research Laboratory (RRL) as a communications engineer working for the Broadcasting Satellite for Experimental Purposes (BSE) project [1]. (RRL was later renamed to the Communications Research Laboratory (CRL), under the Ministry of Posts and Telecommunications, and now reorganized to the National Institute of Information and Communications Technology (NICT)). During the work on the BSE project, I had been interested in the study of communication and broadcasting satellite systems, as well as microwave propagation along satellite-to-earth paths. Figure 1 depicts the front view of the BSE and CS (Communication Satellite) ground stations in Kashima, RRL. I loved working in this

Fig. 1 Broadcasting Satellite for Experimental Purposes (BSE) (left) and Communication Satellite (CS) [2] (right) ground stations, Kashima, NICT. (Photo: provided from KSTC／NICT.)

building—typically until midnight. It was the start line of my research life.

After completion of the BSE project, I became mainly involved with radar remote sensing research. Throughout my research activities, I have struggled with the conflict between the demands of project-related tasks and my desire to devote time to my "own" research. "Running after two things or three things" was too much for me initially. I gradually found, however, my own research specialty and my own "style" of research. After over 20 years at RRL/CRL and some other organizations, I moved to Shimane University in Shimane, Japan. Around that period, my work at the university included not only research but teaching and supervising students, managing my research section and department, as well as contributions to the local community.

3. Turning Point in Research Field: Expanding My Field of View

After a few years with the BSE project, I started thinking about my ability to conduct research and the research field on which I should focus. My close colleagues were already publishing academic papers and giving presentations. In contrast, I was wondering about my own slow progress and looking for a good research subject. I wasn't, however, overly serious about this matter. I was content to continue working on the tasks that were given to me without serious thoughts of the future.

Fortunately, I had an opportunity to reevaluate my own research field. The reason is as follows: After completing the BSE project, I was sent on loan to a semi-governmental company to work on the control of operational communications and broadcasting satellites, thus leaving my research work for two years. After completing the assigned work at the company, RRL gave me an opportunity to express my preferences in research.

Through my work on the BSE project, I had developed interests in two fields; satellite communications systems engineering as the first, and radar remote sensing as the other. During my engagement with the BSE project, my main task and interest was microwave propagation along satellite-to-earth links, a pursuit which is actually related to remote sensing of rain and the atmosphere. Because of this experience, and valuable suggestions from my colleagues, I selected "remote sensing" with two keywords—"radar" and "rain"—as my main research subject. These words seemed to combine my experience in communications engineering with my interest in the environmental issues.

Figure 2 shows an outline of my research field following this decision. You may notice that remote sensing technologies focusing on natural phenomena includes a wide range of engineering and scientific fields, and as such can be considered an interdisciplinary science. This decision allowed my work and research experiences to broaden and prosper.

4. Wandering Around Main Subjects: Specialist with Some Characteristics of a Generalist

After I started in the field of remote sensing in 1985, my first work was to study the detection of oil spills over the ocean using an airborne imaging radar [3]. It was very exciting for me to develop and study the radar data and integrate all of the measurement systems, as well as to conduct experiments. I soon found that I needed to study a great deal regarding various sciences such as rough surface scattering theory, boundary layer meteorology, fluid dynamics, etc. to understand the relation between radar back-scattering characteristics and surface roughness and surface wind speed. I contacted several physicists in related fields, but my progress in understanding the basics was very slow. I also contacted oceanographers as well as officers at the Japan Coast Guard responsible for coastline surveillance to discuss the utilization of the imaging radar operationally. These contacts were essential for

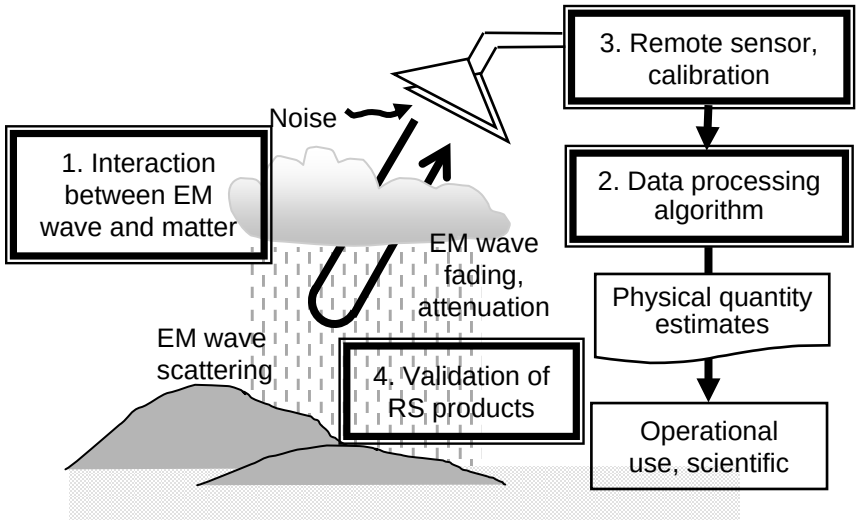

Fig. 2 Schematic of the research areas, 1 to 4, in which I have been mainly involved

understanding user requirements. I started noticing that the remote sensing of natural phenomena requires a wide range of basic knowledge and communication skills, and it would be an uphill task for me.

In 1987, my research focus and project were changed to radar rain remote sensing from aircraft and from satellite. For this study, I was dispatched to Goddard Space Flight Center, NASA (NASA/GSFC), to conduct a series of aircraft experiments to simulate satellite-borne radar measurements of rain. Much wider communications area became necessary. Although I had much difficulty communicating with native English-speakers, it was an invaluable and productive two years for me. I thought I found my own way of approaching research; the study and development of satellite-borne rain radar and the associated data processing algorithms utilizing the characteristics of the characteristics of size distribution of falling raindrops.

After coming back to Japan in 1989, I returned to CRL (formerly RRL), where I was assigned as a member of a new satellite project—Tropical Rainfall Measuring Mission (TRMM). It is a joint U.S.-Japan space program aimed at the quantitative measurement of the global rainfall distribution [4]. In this project, the goal of my team was to develop the first space-borne rain radar (precipitation radar, or PR) [5]. It was again new field for me; the satellite project was much different from the projects I had participated in previously. I tried to work along two parallel lines; development of the PR as a member of the TRMM project and the pursuit of my own research in developing rain retrieval algorithm. It was again very intense, productive period for me. TRMM was launched in November 1997 and operated nearly flawlessly in space for 17 years.

The list of projects described above gives a summary of my work experiences from the age 25 to age 47. Perhaps it is too varied a career for attaining any novel achievement in a particular field. However, I feel that this kind of variety has been fortunate for me to make me a kind of generalist. Let me try to list some of experiences which might be beneficial towards becoming a “generalist”:

(1) ***Break out of one’s mindset:*** It seems that I have had high barriers in starting to communicate with people in other fields. These include meteorologists, oceanographers, hydrologists, information scientists, statisticians, and engineers at private companies. When I overcame my initial hesitation and began to communicate politely and positively, I was often able to discover a new perspective and ideas on my research. At the same time, I thought I might be gradually acquiring a kind of skill as a generalist.

(2) ***Be patient and persevere:*** Generally, it is very difficult to understand the basics or even just the terminology, conversations and presentations of different fields. Such cases were sometimes boring, and I considered them a source of alienation. I learned, however, that it is not necessary to understand everything, but those aspects of the discipline that are essential to my research field. In any case, we need to be patient and make an effort to connect our work with that of others. Communication with those in different fields may be classified into two types: One is an informal exchange of information, and the other is more formal and happens within a project where people with different kinds of expertise must collaborate to make the project successful. Both are important. I was fortunate in that I learned the latter kind of communication at National Space Development Agency of Japan (NASDA), later reorganized to Japan Aerospace Exploration Agency (JAXA), for the development of the TRMM PR.

(3) ***Think about the relationship between one’s research and society***

Remote sensing of natural phenomena such as rain, wind, and ocean is inherently an interdisciplinary field of science/engineering. Because of this, I had many opportunities to think about the relationship between the natural environment and human society throughout my research life. I was fortunate that my field of study provided these chances. I believe that anyone in science and engineering research, or industry, and economy of the present society should assess the impact of one’s work on society and on the environment.

What I believe most important in the items listed above is the need to break out of the confines of one’s own field. This is important in two respects: allowing one to gain new perspectives and insight into one’s own research and having an opportunity to develop the capabilities of a generalist which is often needed as one approaches maturity in one’s research life.

5. Concluding Remarks: What Goal I Should Have Pursued

When I review my career as a researcher, I view my good fortune in several respects: (1) the field I selected was suitable for me because it forced me to break out of my own rather narrow mindset; (2) I was fortunate to have excellent advisors and colleagues at each stage of my career; and (3) even though my affiliation and job characteristics have changed several times, I could maintain a research environment that allowed me to continue remote sensing research over many years.

Although I retired from Shimane University at the end of March 2013, I am still motivated by the desire to publish several research results that I made during the last few years before retirement. After retirement I can also reflect back on my research experiences. During 37 years as a researcher, I sometimes struggled while trying to balance my desire to do research while performing project tasks, teaching at the University, and managing my research section, as depicted in Figure 3. One source of my satisfaction in my research life is that I tried to understand nature and natural environmental processes both in themselves and in how they interact with my research.

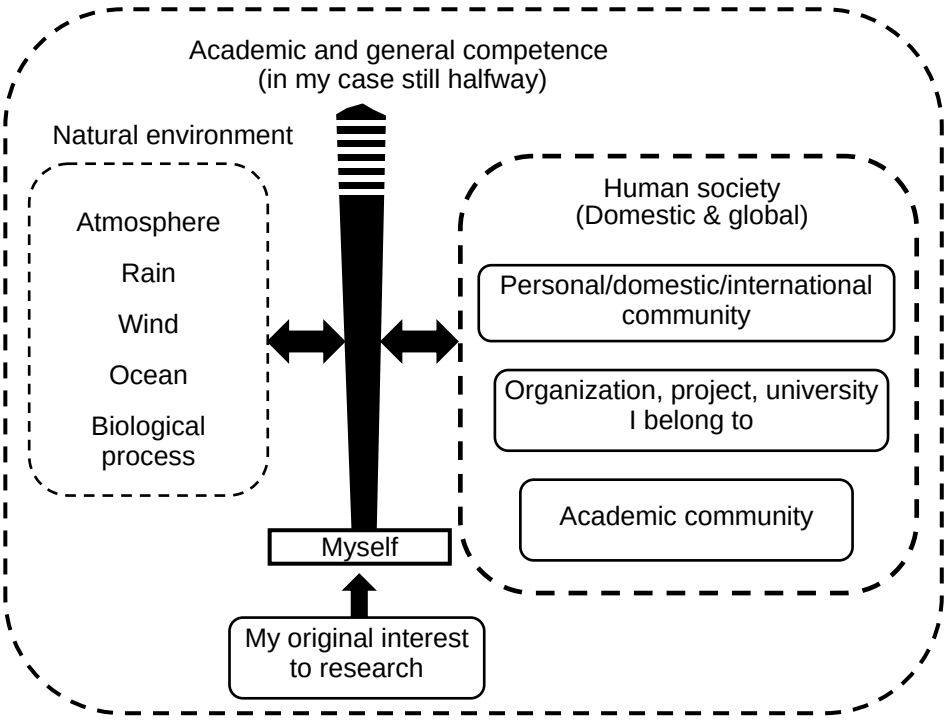

Fig. 3 A conceptual "communication" diagram of my life as a researcher

Initially, I struggled to become a qualified researcher in communications engineering or a related field. I thought that a researcher must be a specialist. However, in struggling to advance my research, I realized that I had to communicate with many people not only those working in other research fields but technicians, engineers at electronics/communications companies, as well as project managers and staff.

I don't think I am an "expert" generalist that people usually imagine, but as a person over 60 now, I feel that I have been fortunate to lead "pretty successful research life." This feeling comes, at least in part, from the fact that I was able to absorb some traits of a "generalist" even though this was not my original goal. I think that the broad notion of a "generalist" is a person that is able to connect his work to the broader ideas of the society and the environment, and their betterment. I believe that any researcher should have a character of the general concept of the generalist mentioned above, although the approach to attain this may be somewhat different depending on research fields.

6. Acknowledgment

I thank Drs. R. Meneghini, NASA/GSFC, and T. Shimomai, Shimane University for their careful reading of the manuscript and useful comments.

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Life in Japan: From Foreign Student to Female Engineer

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Fujitsu Laboratories Ltd.

1. Introduction

First of all, I am really honored to have this opportunity to share my personal experience, in IEICE Global Newsletter, as a foreign researcher living in Japan. I can't help recalling my six years in Japan, from foreign student to female engineer.

When I was living in China, the only impression of Japan I had was Mt. Fuji, and I was fond of anime feature films directed by Miyazaki Hayao. After I finished my master degree, I decided to study abroad without planning too much about my future career.

2. Pursue the PhD Degree

I came to Japan from 2009 to purse PhD degree at Osaka University. In the beginning; the studies were a bit tough, since I changed my major from optics to optical communication. But the most important thing is that I would like to express my deepest gratitude to a number of people who have been incredibly helpful. My supervisor Prof. Kitayama has perhaps played the largest role. He gave me the opportunity to enter optical communication field. Others who have also played important roles are associate Prof. Maruta and Miyoshi-sensei working at Osaka Prefecture University, they helped me a lot in my research work. We have had many discussions which have been of great benefit. Furthermore, my seniors work at Sumitomo Electric Industries Ltd. who let me experience of what it's like at a Japanese company, during a three month internship. I also have to say thank you to all of the other members in Kitayama's lab whom I have many fond memories of. With their help and support, I received my PhD degree in 2013. Figure 1 is a picture of the PhD commencement ceremony at Osaka University.

Another main part of my four years in Osaka was being a Chinese teacher. It started by pure chance, that I get to know several people who were interested in studying Chinese. They organized Chinese classes about once a week and invited me to teach. All of the members in my class are pensioners. During the teaching I had to do my best to explain how I understand the Chinese and how Chinese people think. The sum of these small efforts is that I improved my spoken Japanese. The most valuable part of this experience is that they taught me in depth about Japanese culture. I enjoyed every lesson we had and it was a great way to refresh myself after tough research work. I always feel that I was lucky to meet so many fantastic people in Japan.

In addition, Japan is a good place for people to live. It is really convenient and ranks as one of the top 10 safest countries in the world [1]. All of the experiences above made me decide to find a job in Japan after finishing my PhD.

Fig. 1 PhD degree commencement ceremony

3. Two Years of Work Experience

After I graduated from Osaka University, I moved to Tokyo to start work as an engineer/researcher at Fujitsu Laboratories Ltd.. Mt. Fuji is only about 100 km from here, so it's visible through the office window. One nice shot of the beautiful view of Mt. Fuji is shown in Fig.2.

Fig. 2 Beautiful view of Mt. Fuji

I have read several papers in this foreign section of the Global Newsletter, and I found that most of the foreign researchers have chosen careers at Universities or the National Institute of Japan. However, I chose to

work at a Japanese company's laboratory, since I am more interested in the application of technologies.

The job is related to the optical network design and transmission system construction. In our company, we always work in a team and there are lots of experienced researchers whom I can have valuable discussion with. Until now, the main content of my work was thinking about patents for product commercialization and writing papers for international conference presentation.

I'm able to develop quickly thanks to our company educational system. There are many departments in our company, which occupy large areas of research in hardware as well as software. I feel like I am working in a big knowledge pool. I'm indebted to all researchers I'm able to communicate with, researchers from various professional backgrounds. Not only with researchers working in Japan, but also people abroad. We have regular joint meetings with overseas departments, where we can draw from the collective wisdom and absorb useful ideas.

During my first year at the company, there was a volunteering activity. I and co-workers went to Rikuzentakata, the disaster area hit by the earthquake in 2011. A picture of "Lone Miracle Pine" and co-workers is shown in Fig.3. It is named after the miracle story that the whole city was totally destroyed by tsunami except for this pine. The pine gives lots of spiritual power to post-disaster reconstruction.

Fig. 3 The Lone Miracle Pine in Rikuzentakata

4. Enrich the Spare Time After Work

The reason that I use "female engineer" in the title of this paper is that it's a topic I think many may be interested in. People often think that work in Japan is tough especially for women. Actually, how tough life is depends on the way people think.

In Japan, there are lots of ways people try to relax. One common way is drinking parties in Japanese-style bars. Enjoying drinking parties is a good way to get to know each other well and improve relationship. Japanese drinking games are also interesting. Figure 4 shows a drinking game I experienced in Kochi city in Shikoku, Japan. It was a pilot-test experience tour that highlights the nature and culture of Kochi. During the trip, we enjoyed lots of amusing experiences such as pottery, herbal dyeing, weaving and paper making. But, the most impressive part of the trip was the dinner with geishas at Hamacho. In fact, the several masks shown in the right upper side of the picture are containers for drinking alcohol. The Kabuki, the woman shown in the picture, also participated to the drinking game. We sang and danced together while playing the drinking game. The local Kochi food was wonderful and the drinking game was funny. However, I was really scared by the size of red face cup, since the one who lost the game have to finish all of the drink in the cup in one go.

Fig. 4 Drinking culture of Kochi city

Another way to enjoy your spare time in Japan is going outside the city to enjoy the nature, and hot spring after tiring trip. In Japan, there are lots of photographers and mountain climbing lovers.

5. Ending

At the end of this paper, I'd like to thank to the editor again for giving me this chance. It will be my pleasure if my personal experiences of studying, working and spare-time activities can encourage someone to come to Japan, or help someone already living in Japan keep a positive and optimistic attitude in life.

6. References

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Report on the Green Optical Communications Workshop at KAIST


J.J. Vegas Olmos[†] and J.M. Delgado Mendinueta[††]
[†]Technical University of Denmark, [†]National Institute of Information and Communications Technology (NICT)

1. Introduction and Scope

The Green Optical Communication Networks Workshop 2015, in conjunction with the CLEO Pacific Rim 2015 in Busan, Korea, was held at the Korean Advanced Institute of Science and Technology (KAIST) in Daejeon, Korean, to study and promote green technologies in the area of optical communications. Topics under discussion included green digital signal processing techniques for high-capacity networks, low consumption photonic integrated devices, pre-distortion techniques to increase transmission reach, novel WDM-PON access networks, among others. The Workshop was organized by Prof. Kevin Rhee and Prof. Yun Chung, from KAIST, and A/Prof. J.J. Vegas Olmos, from the Technical University of Denmark. The speakers originated mainly from KAIST, along with the Electronics and Telecommunications Research Institute (ETRI), Korea, and the National Institute of Information and Communications Technology (NICT), Japan. The workshop included oral presentations and two poster sessions.

Fig. 1 Presentation by NICT on green digital signal processing, clean room visit and group picture

2. Relevance of the Workshop

The power consumption of electronic routers is increasing very quickly with traffic, and traffic is growing exponentially. Moreover, the power dissipation of VLSI technologies does not improve as expected in Moore's Law [1]. Photonic technologies are alleviating these challenges, and so far they have been able to reduce the energy per bit in point-to-point optical links. However, the energy per second per user is increasing due to an increase in the bits per second per user. In other words, the per-user bandwidth demand increase dominates over the energy per bit reduction, leading to an overall increase in network energy consumption. This increase in the per-user bandwidth may be due to novel applications in which each user forms a cloud of data which needs to be accessible anytime-anywhere.

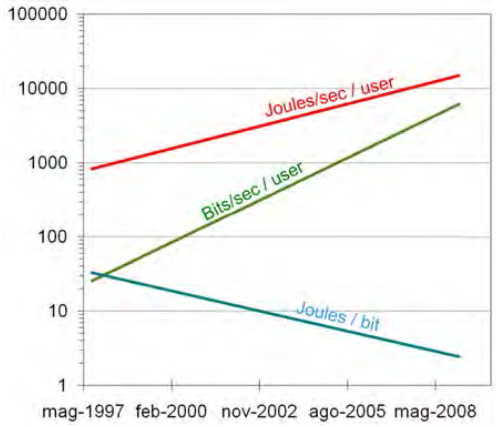

Fig. 2 Evolution of the total power consumption per user, energy per bit and bandwidth per user [1]

From a holistic point of view, this increase in energy per second per user needs to be addressed as the world faces some uncertainties on the global energy supply, as shown in Fig. 3, and renewable energy sources are not yet mature to overtake traditional fossil fuel sources. Therefore, energy efficiency is fundamental in order to meet the challenges of the following years.

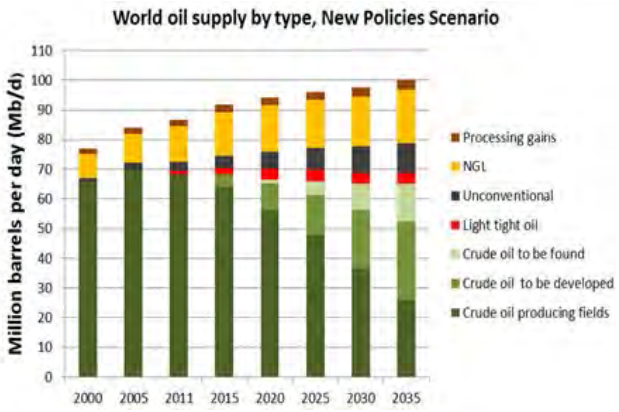

Fig. 3 International Energy Agency (IEA) estimated world oil supply [2]

3. Photonic Devices

Photonic devices enable system functionalities that are difficult to implement with traditional solid state technologies. This area of development requires a strong cooperative design among different fields: physics, materials and integration engineering. There is a clear consensus that silicon photonics is a potentially disruptive technology in the telecommunications arena and also other areas such as biophotonics, sensing, and metrology. However, the main challenge is not the development of technologies, but rather to find an application that can drive volume and push costs down. Research areas identified during the workshop are:

- Sub-wavelength scale integrated photonics.
- Development of cost-effective packaging techniques.
- Hybrid integration of silicon photonics with III/V.
- Increase effective bandwidth of silicon modulators.

4. Digital Signal Processing

Digital signal processing (DSP) is a fundamental technology of current and future optical communication networks [3]. However, current optical networks are optimized for transmission performance with little consideration about energy efficiency. Fig. 4 shows the relative energy consumption of each DSP stage in current generation DSP ASICs for optical networks. Future networks may require a holistic redesign to tackle energy efficiency [1]. For example, one such scheme may be the introduction of self-homodyne transmission in multicore fibers (MCFs) developed at NICT [5]. In this scheme, the laser used in the transmitter is propagated unmodulated in one of the MCF cores to be used as local oscillator at the receiver. This enables a reduction of the phase noise and may lead to energy savings due to joint-DSP shared resources among different MCF cores.

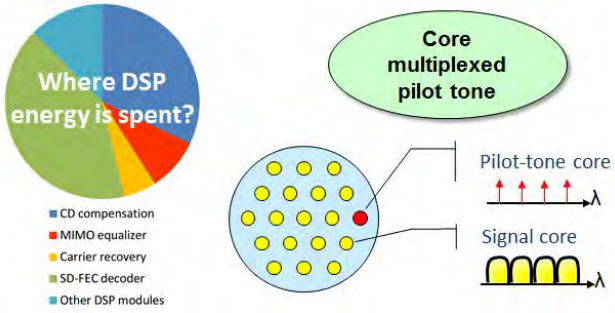

Fig. 4 Percentage of energy consumption in receiver ASIC per DSP stage, and utilization of multi-core fibers to ease DSP functions (i.e., self-homodyne MCF distribution of pilot-tones [5])

For the next generation of energy efficient DSP in optical networks, the following points were devised during the workshop:

- Network energy consumption should be a function of network utilization. Flexible, rate-adaptive transceivers, including flexible DSP blocks, are the main target to implement energy saving policies.
- Novel FEC algorithms and FEC ASIC implementations are key to reduce the power consumption.
- Multi-core fibers enable novel architectures which may simplify the DSP processes and consequently improve the energy consumption.
- MCF may be used to trade bandwidth (spatial redundancy) for energy consumption. Additional research is needed to identify new modulation formats and transmission paradigms in MCF to optimize this trade-off.

5. Systems and Architectures

Power consumption in terms of energy per second per user increases drastically in access networks, specifically in edge nodes and the last mile [6]. This is the reason novel architectures, systems, modulation formats and a holistic combination of them all are under study. Wireless systems, for example, are solely supported by optical networks; there is a trend in employing radio-over-fiber technologies for mobile back-haul/front-haul. Radio-over-fiber for access in the millimeter wave regime is a mayor research trend since this architectures offer high-density, which in turn offers the possibility of re-using frequency bands, reduce the launched RF power and improve the energy consumption. Areas identified in the workshop were:

- mmW communications for mobile back-haul using >70 GHz, including low-terahertz.
- mmW communications for end users based on MIMO techniques, low-power radiation and high capacity.

6. Summary

The Green Optical Communication Networks Workshop 2015, co-allocated with CLEO-PR 2015, was successfully closed. Main topics of research were identified in the field of photonic communications; energy efficiency is a main aspect, which requires co-design between devices, systems and architectures to effectively optimize the energy expenditures. Main research challenges can be found in novel photonic devices, DSP algorithms, multi-core fiber systems, and new optical access systems to provide more bandwidth with less energy to end users.

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Report on the 2015 Asian Workshop on Antennas and Propagation (AWAP2015)

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Secretary of Technical Committee on Antennas and Propagation

1. Introduction

The 2015 Asian Workshop on Antennas and Propagation (AWAP2015) was held at Swissotel Le Concorde, Bangkok, Thailand from June 17th-18th, 2015. This workshop was organized by three institutes from three countries, namely, the Electromagnetic Group of the Electrical Engineering/Electronics, Computer Telecommunications and Information Technology Association (ECTI) from Thailand, the Technical Committee on Antennas and Propagation of the Institute of Electronics, Information and Communication Engineers (IEICE) from Japan and the Technical Group on Antennas and Propagation of the Korean Institute of Electromagnetic Engineering and Science (KIEES) from Korea.

2. Historical Background of AWAP

AWAP is the former KJAP (Korea-Japan Joint Workshop on Antennas and Propagation) and has grown to be an Asian workshop to which all researchers are welcome from anywhere in the world. It is intended to provide an international forum for the exchange of information on the progress of research and development in antennas, propagation, and related fields. Another important objective of this meeting is to promote interaction among the participants. The first AWAP2014 was held at Kanazawa City in Japan [1]. In AWAP2015, the co-chairs from three countries were Prof. Monai Krairiksh (KMITL, Thailand), Prof. Seong-Ook Park (KAIST, Korea) and Prof. Keizo Cho (Chiba Inst. of Tech., Japan).

3. Technical Sessions and Banquet

The number of technical papers and the number of participants are shown in Table1. The largest number of papers came from Korea while most participants came from Japan. In total, 23 papers were presented. All 5 sessions consisted of oral presentations. The contents of the presentations comprised a range of unique and novel technical topics including time-domain electromagnetic analysis, slot antennas, RFID, cellular terminal antennas, GPS antennas, millimeter-wave antennas, satellite communications, aircraft tracking antennas, MIMO systems, radar cross-section analysis, antenna measurement, and wireless power transfer. There was particular interest in hyperbolic metasurfaces and cellular base station antennas using EBG electro band gap (EBG). Figure 1 shows Prof. Keizo Cho giving the opening remarks and Fig. 2 shows all members gathered together following the closing remarks.

The banquet was held at the same hotel. Regarding the awards, Prof. Hiroyuki Arai, the former chairperson of AWAP2014 (shown in Fig. 3), and the three secretaries as well as Prof. Titipong (Thailand), Prof. Chung (Korea) and the author in the title picture on the elephant of AWAP2015all received commendations as outstanding researchers. At the banquet, there was animated conversation about the future for antennas and propagation technology, all of which served to promote friendship among the attendees (shown in Fig. 4).

Table 1. Number of technical papers and participants

Country	Paper	Participant	
		Regular	Student
Thailand	5	12	0
Korea	10	12	4
Japan	8	17	3
Total	23	41	7

Fig. 1 Opening Remarks (Prof. Cho)

Fig. 3 Outstanding Researcher Award (Left: Prof. Monai and Right: Prof. Arai)

Fig. 2 All attendees at AWAP2015 in Bangkok Thailand

Fig. 4 Banquet
(Left: Prof. Cho and Right: Prof. Monai)

4. Technical Tour

Some Japanese participants visited DKK-Manufacturing (Denki Kogyo Co. Ltd.), a factory located in Ayutthaya (shown in Fig 5). The main activities at this factory are antenna production and post-production checking. Mr. Yokota, the general manager of DKK manufacturing, explained that there are 90 persons employed at the factory but only four of them are Japanese. Currently, an enthusiastic workforce of Thai women is making cellular base station antennas for LTE.

Fig. 5 Factory at DKK-Manufacturing in Ayutthaya

5. Conclusion

AWAP2015 was brought to a successful conclusion. The AWAP steering committee meeting (shown in Fig. 6) was held concurrently with the workshop. The committee decided that AWAP2016 will be held on January 27th-28th 2016 at the Haeundae Centum Hotel in Busan, South Korea, and will be organized by four countries. Moreover, AWAP2017 will be held in June, in Hokkaido, Japan.

See you in Busan!

Fig. 6 Board members at steering committee meeting

6. References

[1] Kunio Sakakibara, “Report on the 2014 Asian Workshop on Antenna and Propagation (AWAP2014)”, IEICE Com. Society- Global Newsletter Vol. 38, No.3 pp14-15.

[2] IEICE Technical Committee on Antennas and Propagation web site, https://www.ieice.org/cs/ap/jpn/index.php?awap/awap2015

Report on International Symposium on Ultrafast Photonic Technologies and Extremely Advanced Transmission Technology (ISUPT/EXAT 2015)

Technical Committee on Extremely Advanced Transmission Technology

1. Introduction

The 7th International Symposium on Ultrafast Photonic Technologies (ISUPT 2015) and International Symposium on Extremely Advanced Transmission Technology (EXAT 2015) were jointly held at Kyoto on July 13-15, 2015, just before the climax of the Gion Festival. ISUPT/EXAT 2015 was organized by IEICE Technical Committee on Extremely Advanced Optical Transmission Technologies (EXAT), NICT, and Vertically Integrated Center for Technologies of Optical Routing toward Ideal Energy Savings (VICTORIES) in National Institute of Advanced Industrial Science and Technology (AIST).

2. Background

One of the major research interests in the field of recent optical communication technology is how to overcome the capacity limit through space division multiplexing (SDM) using multi-core and multi-mode fibers. In Japan, EXAT community initiated the development of the SDM technology in 2008 and has promoted the 3-M (multi-core, multi-mode, multi-level) technology. In particular, the launch of the IEICE EXAT Technical Committee in 2010 has made a profound contribution to accelerate “all-Japan” collaborative research activities on SDM and establish global leadership in this field, which led to the world’s first demonstration of Pbit/s transmission reported from NTT et al. The progress of SDM development is so fast that the scope of research is being rapidly spread from subsystems to device integration and network applications, and the focus is being shifted from idea to feasibility. Taking account of this trend, EXAT community has organized two international symposia to enhance interactions among researchers on SDM worldwide.

On the other hand, ISUPT, which started in 2003, has provided an opportunity for researchers working on ultrafast photonic technologies to discuss the latest advances and future directions of this field, including ultrahigh-speed optical communication, optical metrology, lasers, bio-medical technology, and advanced measurement technologies. ISUPT has taken place every two years and been organized by NICT, AIST, Tohoku University, and Waseda University. In ISUPT 2013, which was held in Rochester, USA, the capacity limit with current single-core single-mode fibers became one of the main scopes, and SDM was recognized as a next direction to explore. From these backgrounds, in order to share the same perspective, we figured out that the joint symposium would be beneficial for both communities, and decided to hold ISUPT and EXAT jointly in 2015.

3. Technical sessions

The symposium consisted of 22 invited talks, including 13 from overseas, and 39 contributed poster presentations, and there were 127 participants (Fig. 1).

Day one (June 13) of the symposium started with an opening remark by Prof. Yuichi Matsushima (Waseda University), the IEICE EXAT committee chair, presenting the history and background of ISUPT and EXAT and the motivation of the joint symposium (Fig. 2). After that, the technical session started with a plenary talk by Prof. Franz X. Kärtner (DESY / University of Hamburg / MIT), describing the latest progress in high energy pulse sources. It was followed by six invited talks by Prof. Susumu Noda (Kyoto University), Dr. Tsuneto Kanai (TU Vienna), Prof. Toshihiko Hirooka (Tohoku University), Prof. Stojan

Fig. 1 Overview of technical session

Fig. 2 Opening remark by Prof. Matsushima

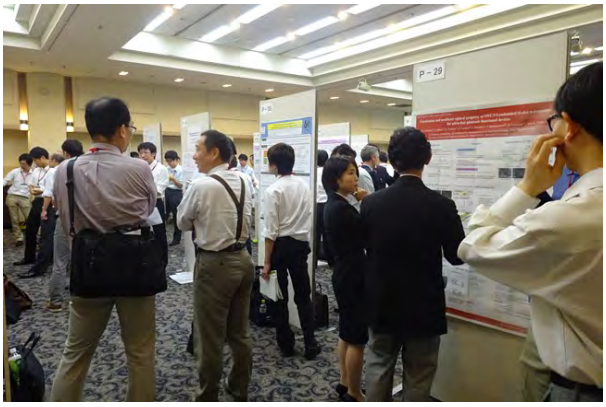

Fig. 3 Overview of poster session

Radic (University of California San Diego), Prof. Kaoru Minoshima (The University of Electro-Communications), and Prof. Joel Carpenter (The University of Queensland). They featured ultrafast sources, data transmission, and photonic manipulation. In the evening we had a poster session, whose topics ranged from SDM fibers, components, transmissions to ultrafast photonic materials, devices, and networks. The participants had an opportunity for in-depth discussion and exchange of new ideas (Fig. 3).

On day two (June 14), we welcomed another plenary speaker, Prof. Ton Koonen (Eindhoven University of Technology, the Netherlands), who presented recent activities in EU project on SDM. We also had eight invited talks by Prof. Masataka Nakazawa (Tohoku University), Prof. Kunimasa Saitoh (Hokkaido University), Dr. Pierre Sillard (Prysmian Group), Prof. Siddharth Ramachandran (Boston University), Dr. Ben Puttnam (NICT), Prof. Leif Katsuo Oxenløwe (Technical University of Denmark), Prof. Tsuyoshi Konishi (Osaka University), and Prof. Dan M. Marom (The Hebrew University of Jerusalem). They covered the topics of SDM fibers and their characterization and ultrafast optical signal processing.

Day three (July 15) consisted of 10 invited talks by Dr. Kazuhiro Ikeda (AIST), Prof. Katsuyuki Utaka (Waseda University), David J. Richardson (University of Southampton), Prof. S. J. Ben Yoo (University of California Davis), Dr. Ryuichi Sugizaki (Furukawa Electric co., ltd.), Dr. Taiji Sakamoto (NTT), Prof. Koji Igarashi (Osaka University), Dr. Roland Ryf (Bell Laboratories, Alcatel-Lucent USA), Dr. Takayuki Mizuno (NTT), and Dr. Sebastian Randel (Bell Laboratories, Alcatel-Lucent USA). They highlighted the progress in SDM subsystems (amplifiers, waveguides, nodes, etc.) and large-capacity transmissions, and silicon photonics. The symposium was concluded by the closing remark by Dr. Tetsuya Miyazaki (NICT), chair of ISUPT 2015, who summarized the insights obtained through the three-day symposium. We also paid tribute to Prof. Harm Dorren (Eindhoven University of Technology), who has been actively involved in ISUPT but unfortunately passed away in March.

During the symposium, it was announced that the next ISUPT will be hosted by Prof. David Richardson (University of Southampton, UK) in 2017. Prof. Richardson gave a presentation and introduced the city of Southampton and its attraction, which received a lot of interest among the participants.

4. Conclusion

The symposium ended with great success, and offered a unique opportunity for stimulating interdisciplinary discussion between two extremes in photonics, i.e., time domain extreme (ultrashort and ultrahigh-speed) in ISUPT and spatial domain extreme (ultrahigh density and resolution) in EXAT. The former included the latest achievements in attosecond science, high-Q nanocavity, and ultrawide-band optical comb, while the latter featured the latest progress in high-density multi-core fibers, higher-order multi-mode technologies, and ultralarge-capacity SDM transmission. In addition, several talks involved efforts being made to explore these two extremes simultaneously to create novel functionalities, such as time-lens signal processing, time-to-space conversion, modulation and coding on spatial dimensions, and time-space-frequency resource management for efficient network operation. This indicates more possibilities are expected to open up new horizons in photonics.

Finally, we would like to express our sincere thanks to all the invited speakers, especially those from overseas, as well as poster presenters and participants, for their contributions to make the symposium successful.

Report on Communications Society Special Talk and Awards Ceremony at 2015 IEICE Society Conference

Takuya Asaka and Tadao Nakagawa
Director of General Affairs, IEICE Communications Society

1. Introduction

In this report, we provide an overview of the Communications Society Special Talk and Awards Ceremony, which was held on 9 September 2015 during the 2015 IEICE Society Conference at Tohoku University, Sendai, Japan.

During the awards ceremony, two awards were presented by Prof. Masahiro Umehira, President of the Communications Society: the Outstanding Contribution Award and the Distinguished Contribution Award.

The special talk for this year was "*The management communication based on accounting and management philosophy*" by Ms. Kumiko Mizuno, Mizuno Accounting Firm, Hyogo.

Fig. 2 Professor Masahiro Umehira,, President of the Communications Society, gives opening remarks

Fig. 1 Participants at the Special Talk and Awards Ceremony at the 2015 IEICE Society Conference

Fig. 3 Distinguished Contribution Award presented by Prof. Masahiro Umehira

2. Awards Ceremony

The Outstanding Contribution Award was presented for the chairing of technical committees and services of chief editor on the Editorial Boards of *Transactions on Communications* and *Communications Society Magazine*. Sixteen members were awarded for their services prior to 2015. The Distinguished Contribution Award was presented for extraordinary planning activities and voluntarily reviewing paper in the Communications Society. One hundred and six members were awarded for their contributions prior to 2015.

3. Special Talk

Ms. Kumiko Mizuno, who is a certified public accountant, was the invited speaker of the special talk.

Her lecture was titled "*The management communication based on accounting and management philosophy*". She began by presenting features of communication among people. She explained her philosophy on communication, derived from her many past work experiences. Smooth communication can solve conflicts. Furthermore, it can make people happy. Smooth communication points the vector of an organization toward the same direction, hence creating a strong organization. In all employees as well as

managers, it is important to aim to live as a decent human being. Everyone should always perform their job honestly, while pursuing profit. Next, she talked about the importance of "numbers" in management. If you express a fact as "numbers", for example, "cost per person", become understandable various issues of management. The use of "numbers" is very effective in management because they are a common language for people. She concluded that successful organizational operation, can be achieved by the proper use of "numbers" as a common language and, the realization of smooth communication.

Fig. 4 Special talk by Ms. Kumiko Mizuno, Mizuno Accounting Firm

Fig. 5 Professor Masayuki Murata, President-Elect of Communications Society giving closing remarks

4. Conclusions

An overview of the Communications Society Special Talk and Awards Ceremony was presented. The Communications Society supports members' activities in the field of communications by presenting awards for their contributions.

The ceremony was concluded by closing remarks from Prof. Masayuki Murata, President-Elect of the Communications Society.

Report on ICM English Session at 2015 IEICE Society Conference

− BS-6, Network and Service Design, Control and Management −

Kazunori Ueda
School of Information, Kochi University of Technology

1. Introduction

The 2015 IEICE Society Conference was held at Tohoku University in Miyagi, on September 8-11, 2015, where three Societies of Engineering Sciences Society (ESS), Communications Society (CS), and Electronics Society (ES) joined. 13 Symposium Sessions and 65 General Sessions were held. The number of registered participants reached about 3,000 in total.

In the Conference, the IEICE Technical Committee on "Information Communication Management (ICM)" hosted a full English Session entitled "Network and Service Design, Control and Management" as one of 13 Symposium Sessions which focused on special topics of advanced technologies.

2. Background of ICM English Session

ICM has been hosting English session every year since 2004. The purpose of this English session is to contribute to the globalization of IEICE by offering the chance of the presentation and discussion in English to "the foreign researchers / students living in Japan" and "the overseas researchers / students".

Figure 1 shows the change in the number of contribution papers since 2004. When the session began in 2004, only 15 papers were submitted. The number of papers has gradually increased, and it reached 55 papers in 2013. Although the number of papers decreased in last year, the number of papers increased again in this year. The holding period of the session in the 2004 was one and half days, and the holding period of the session in this year was 4 days which was the same as the period of the IEICE Society Conference.

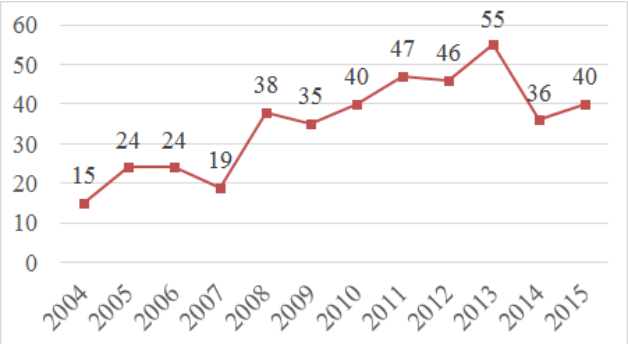

Fig. 1 The number of contribution papers since 2004

3. Presentations in ICM English Session

The contribution papers were classified into 14 sub-sessions according to the topics and set up every day during the Society Conference. Various topics are discussed in each sub-session every year. Figure 2 shows the number of papers corresponding to their topics. 13 papers were especially concerning wireless systems / networks, ad-hoc network, sensor networking in this year. These topics stem from an explosive spread of a smart phone, and for the Great East Japan Earthquake, etc. Some topics covering the application layers such as application & service and cloud computing were also discussed. Topics of pricing / resource management and network architecture also had a lot of discussions as in the ordinary year.

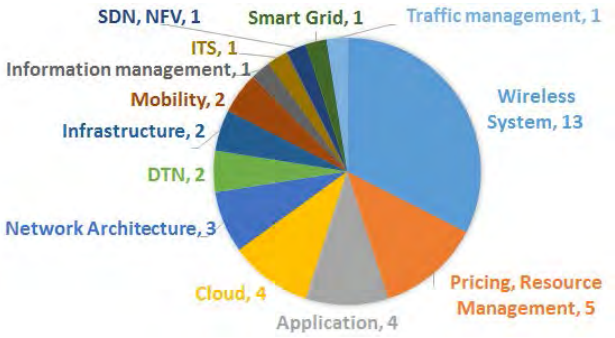

Fig. 2 The number of contribution papers corresponding to their topics

4. Authors

Figure 3 shows the number of papers corresponding to the categorization of the presenter's affiliations. 85% of the presenters belonged to the university. 10% belongs to research institutes, and remained 5% belongs to the industries. The situation in which the contribution from the university occupied the majority did not change.

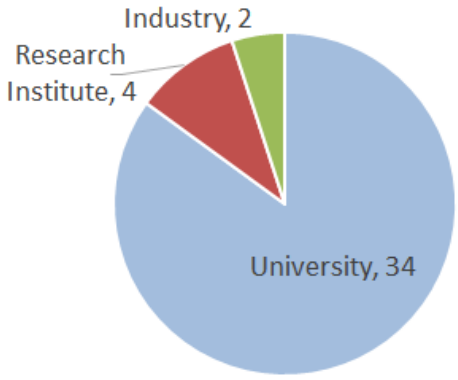

Fig. 3 The number of papers corresponding to the categorization of the presenter's affiliations

Although most of presenters were international students studying in Japan and foreign researchers working in Japanese industries, 7 presenters were Japanese students or researchers. In this symposium, ICM expects the open contribution from not only the university but also enterprise, and expects the various presenters from not only the international students and the foreign researchers but also Japanese students and researchers, too. And, there was one contribution from outside of Japan this year. As the purpose of the English session is the contribution to the globalization of IEICE, ICM hopes that the papers from the outside of Japan will increase in next year.

Every presenter and audience enthusiastically discussed the ideas and opinions in the time assigned for question and answer (Fig. 4). Since the assigned time passed quickly, presenter and questioner continued their discussion here and there even into the break periods.

Fig. 4 ICM English session in 2015

5. Award of ICM English Session

ICM will select the best papers and award a prize of the session in the near future to encourage their continuous activities. The best papers will be awarded in the upcoming ICM workshop in March 2016. ICM awarded the following papers presented in the 2014 IEICE Society Conference in March this year.

Table 1 English session Awardees of ICM Committee

Awardees	Title
Zilu Liang, Yasushi Wakahara (The Univ. of Tokyo)	Microscopic Route Guidance System with Vehicle-Level Rerouting for Facilitating Smooth Travel in City Areas
Kevin Pognart, Hideki Tode, Yosuke Tanigawa (Osaka Prefecture Univ.)	A STUDY ON KEYWORD-BASED SEARCH METHODS FOR BREADCBUMBS-BASED CONTENT-ORIENTED NETWORK
Tananun Orawiwattanakul, Hideki Otsuki, Eiji Kawai, Shinji Shimojo (NICT)	Multiple Classes of Service Provisioning in DCN

6. Conclusion

ICM English session in 2015 was a big success because a lot of papers were contributed and a very active discussion is done. I believe that this session became fruitful for all people, and was able to contribute to the globalization of IEICE. I wish that more papers will be contributed to the session in the next year.

7. Acknowledgement

I, as the organizer of this ICM English session, would like to thank Prof. Yoshiaki Tanaka of Waseda University, who made a great contribution in soliciting papers, utilizing his nation-wide academic authority and human relations. I would also like to thank all the member of the ICM committee, the attendees and everyone who contributed to the discussions and supported the session.

8. References

[1] IEICE ICM Technical Committee web site, http://www.ieice.org/~icm/eng/

[2] Zilu Liang, Yasushi Wakahara, "Microscopic Route Guidance System with Vehicle-Level Rerouting for Facilitating Smooth Travel in City Areas," 2014 IEICE Society Conference, BS-6-12, Sept. 2014.

[3] Kevin Pognart, Hideki Tode, Yosuke Tanigawa, "A STUDY ON KEYWORD-BASED SEARCH METHODS FOR BREADCBUMBS-BASED CONTENT-ORIENTED NETWORK," 2014 IEICE Society Conference, BS-6-20, Sept. 2014.

[4] Tananun Orawiwattanakul, Hideki Otsuki, Eiji Kawai, Shinji Shimojo, "Multiple Classes of Service Provisioning in DCN," 2014 IEICE Society Conference, BS-6-28, Sept. 2014.

Report on the 5th International Symposium on Network Virtualization

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and Yutaka Takita**

*NTT Network Innovation Laboratories
** Fujitsu Laboratories Ltd.



1. Introduction

The 5th International Symposium on Network Virtualization was held on August 28th, 2015, at the University of Tokyo, Japan. The symposium has been held annually since 2011 to promote research and development of network virtualization through international collaboration of researchers, aiming at realizing new communications infrastructure using the technology.

2. Overview of This Year's Symposium

This year's symposium, with the theme "Social impacts of softwarization and 5G networking," introduced the latest research activities in the areas of network virtualization and related technologies, such as Software Defined Networking (SDN) and Network Functions Virtualization (NFV). The symposium was co-hosted by Symposium Committee of the 5th Network Virtualization Symposium; IEICE Technical committee on Network Virtualization; Interfaculty Initiative in Information Studies, Graduate School of Interdisciplinary Information Studies, The University of Tokyo (U-Tokyo); Graduate program for social ICT Global Creative Leaders (GCL), U-Tokyo; National Institute of Information and Communications Technology (NICT); and Network Virtualization Working Group, JSPS 163rd Committee on Internet Technology (ITRC). Mr. Katsuhiro Shimano of NTT Network Innovation Laboratories chaired the Symposium Committee.

Fig. 1 Opening of the symposium

In the technical sessions, participants discussed various aspects about programmability in virtualized networks, including future research directions and promising applications. Issues about 5G mobile, such as technical requirements and prospects on its networking or applications, were also an important topic this year.

As in the past meetings, this year's meeting gathered about 100 attendees from both industries and academia, including many students. A social gathering was also held after the symposium sessions. The international symposium, this year's being the fifth, thus provides a good opportunity for interaction among researchers and engineers with various backgrounds.

Fig. 2 Participants in the symposium

3. Program

The symposium started with the greeting by the symposium chairperson, Mr. Shimano. Following that, three speakers gave opening speeches: Prof. Toshiyuki Nakata (GCL), Prof. Akihiro Nakao (ITRC) and Mr. Makoto Imase (NICT).

The technical sessions started after the opening speeches. Six experts, from in and outside Japan, were invited to give presentations. Below are the list of the

speakers' names, affiliations, and presentation titles in the order of appearance:

1. Chip Elliot (GENI), *Looking Beyond the Internet -The Rise of Software-Defined Infrastructure -*
2. Glenn Ricart (US Ignite), *A Software-driven Virtual Infrastructure for Smart Gigabit Communities*
3. Jiann-liang Chen (National Taiwan University of Science and Technology), *SDN Network Virtualization Practices*
4. Akira Matsunaga (KDDI Corporation), *Perspectives of 5G Mobile Communication Systems*
5. Yoshiaki Kiriha (NEC Corporation), *O3 User Oriented SDN for WAN Application Services*
6. Akihiro Nakao (U-Tokyo/GCL/ITRC/NICT), *5G Mobile Network and Network Softwarization*

The first two speakers, Mr. Elliot and Mr. Ricart, introduced latest activities in the US. Both the presentations showed the way telecommunications would evolve to meet highly customized demands while incorporating emerging technologies like Internet of Things (IoT). They stated importance of the ideas in which virtualized networks would become even more software-driven. The third speaker, Prof. Chen, introduced Taiwan's projects on SDN related technologies and explained some of the achievements. In one example, SDN layered architecture was extended to incorporate a new, transparent layer between controllers and switches, whereby realizing network virtualization. The following three speakers are all from Japan. Mr. Matsunaga described 5G mobile systems from various technological aspects like requirements and networking concepts. Mr. Kiriha introduced a Japanese joint research project, "O3 Project," and explained its directions and some of the achievements. Finally, Prof. Nakao overviewed recent developments of this technological field as well as newest movements towards standardization, using the 'network softwarization' concept.

After these presentations, a panel discussion was held under the chairmanship of Prof. Nakao with the following theme: what is the next baby step for realizing future Internet applications programs. The panelists were Mr. Elliot, Mr. Ricart, Prof. Chen, Prof. Tomonori Aoyama (Keio University) and Prof. Nakata. During the one-hour discussions, they talked about what kinds of measures should be taken for the goal. Audience was also actively involved.

Next to the conference room, there were six exhibition booths, which were set up along with the sessions. In each booth, researchers from universities, vendors, and carriers explained their newest activities using demonstrations and posters.

Additional information about the program is available at the symposium website [1].

Fig. 3 Presentation by Mr. Chip Elliot

Fig. 4 Presentation by Mr. Glenn Ricart

Fig. 5 Exhibition

4. Conclusion

Network virtualization is developing very quickly in synchronization with SDN and NFV. It is expanding its roles into future infrastructures with software and applications being its key drivers. This year's symposium successfully showed the trend. We hope this annual event will keep serving as a place for international cooperation to accelerate the move.

5. Reference

[1] http://www.ieice.org/~nv/english/symposium1

Activities of Technical Committee on Optical Fiber Technologies (OFT)

Hidenobu Hirota* and Terutake Kobayashi**
*NTT, **Fujikura Ltd.

1. Introduction

The OFT is one of the technical committees of Communications Society of the IEICE. One of the most important aims of our committee is to contribute to technological innovation of optical fiber technologies for development of industrial applications by focusing on the technologies from cross-sector viewpoints on the communication engineering, measurement technologies, optical devices, and materials.

2. Covered Research Fields

OFT concerns itself with a wide variety of research related to optical fibers and optical systems (Table 1). We argue the optical device that applied for the actual comnucation equipment. OFT cover the research area from optical basic technology to actual maintenance. In this year, the memorial lecure related the IEEE milestone is organized.

Table 1 Topics

Major Topic Areas	Topics
Optical fiber sensing	Optical fiber probe, Optical fiber gyroscope, Optical fiber sensor device, Distributed opticalsensing, Remote optical sensing, Optical fiber measurement, Optical reflectometry
Optical fiber devices	Optical signal information processing, Optical fiber interferometer, Optical fiber amplifier, Optical fiber laser, Optical fiber coupler/splitter, Optical filter
Optical fiber systems	Image/Illumination/Display,Material processing system, Medical system, Biological system, High-power system, Environmental system, Communication system
Optical fiber wiring/ installing, maintenances/ operations	Testing system for optical line, Management for optical line, Reliability of optical line, Design of optical line, Construction technique for optical line, Optical connector/interconnection, Optical line components
Design of optical fiber/ cable	Characterization of optical fiber, Reliability of optical fiber, Optical propagation analysis, Analysis of optical fiber character, Optical fiber cable/Optical fiber cord, Optical fiber for various use

3. OFT Activities

The OFT holds one- or two-day technical meetingssix times a year. At the meetings, many researchers participate and report the latest results of their research. The schedule from May 2015 to March 2016,consisting of six regular technical meetings is shown in Fig. 1. Several of them are co-organized with the OCS (Optical Communication Systems), LSJ (Laser society of Japan), IEE-CMN (Institute of Electrical Engineers of Japan - Communications), ITE-BCT (Institute of Image Information and Television Engineers – Broadcast Technologies), and OPE (Opto-electronics) committees. The number of the presented papers atregular meetings in the last year was 70 and the number of participants was 536.

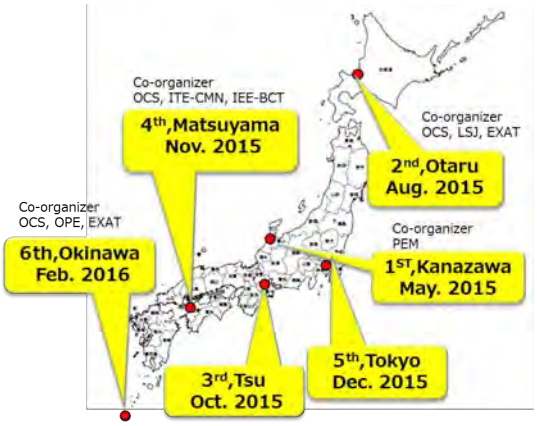

Fig. 1 Regular technical meetings

4. OFT Encouragement Award

OFT encourage research activities of younger researchers. Since the program was launched in 2011, it has commended 12 award winners up until the 3rd award for outstanding younger researcher in 2014 Encouragement award in 2014 was as follows:

1)“Multi-core Fiber Fan-out Device Using Coupling Lens” by Hajime Arao, Sumitomo Electric Industries, Ltd.
2)“Design of low DMD few-mode fibers supporting large number of modes for mode-division-multiplexed transmission ” by Takayoshi Mori, NTT
3)“True Time Delay Beamforming Using Semiconductor Optical Amplifier and Tunable Dispersion Medium for Phased Array Antenna” by Minamoto Yamato, The University of Electro-Communications.
4)“A Study of Fused Type Fan-in /Fan-out Devices for Two-Mode Multi-Core Fibers” by Kouhei Masumoto, Hokkaido University.

IEICE Fellow Conferred on 9 IEICE-CS Members

Moriya Nakamura
Director of Planning and Member Activities,
IEICE Communications Society

1. Introduction

The title of IEICE Fellow is conferred on IEICE members who are recognized as having made a significant contribution to the institute in academic, technical or related fields. In 2015, IEICE Fellow is conferred on 30 IEICE members including 9 from Communications Society (CS) who are listed in Table 1.

2. The Conferment Ceremony

On 9th September during IEICE Society Conference 2015 in Sendai, Miyagi, the 16th Fellow Conferment Ceremony was held (Fig.1). In the Ceremony, Prof. Masanori Koshiba, the president of IEICE handed a fellow badge and a certification plate to each new Fellow.

3. Next Fellow Conferment Ceremony

From next fiscal year, Fellow Conferment Ceremonies will be held at IEICE General Conferences. The next ceremony is going to be held in Nagoya, March, 2017.

Table 1 New IEICE Fellows from Communications Society

Name	Contribution contents
Shigeo URUSHIDANI	For Contributions to Research and Development of Multi-layer Network Control Technologies
Takeo OHGANE	For Contributions to Research and Development of MIMO Signal Processing and Its Widespread Dissemination
Tomoaki OHTSUKI	For Contributions to Research on Wireless Sensing Based on Spatial-temporal Signal Processing
Masayoshi OHASHI	For Contributions to Research and Development of Ubiquitous Mobile Communication System
Kanshiro KASHIKI	For Contribution to Research and Development of Digital Mobile Satellite Communications and Cognitive Radio Communications
Mamoru SAWAHASHI	For Contributions to Research and Development of Radio Access Technologies for 3rd and 4th Generation Mobile Communications
Masahito TOMIZAWA	For Contributions to Research, Development and Standardization of Technologies for Large Capacity Optical Transport Networks
Hisaya HADAMA	For Contributions to Research of ATM Transport Network Architecture
Jian YANG	For Contributions to Theoretical Development of Polarimetric Radar Remote Sensing

Fig. 1 Photo in the Fellow Conferment Ceremony with Prof. M. Koshiba, President of IEICE and Prof. M. Umehira, President of IEICE Communications Society

Special Section of IEICE Transactions on Communications: Position Papers Exploring Innovative Intelligence and Technologies in Communications, Part II
− Summary and Published Papers −

Takuji Tachibana[†] and Kazunori Hayashi[††], *Guest Editors of the special section*
[†]University of Fukui, [††]Kyoto University

1. Introduction

In the IEICE Transactions on Communications, we have planned the special section “Position Papers Exploring Innovative Intelligence and Technologies in Communications, Part II” for the publication in December 2015. In this article, we would like to summarize the special section and briefly introduce the published papers in this issue.

2. Scope of the Special Section

Expansion of the field of communications has unlimited boundaries, and research and development (R&D) has been continuously pursued to support this expansion. A lot of new key ideas are emerging and open up novel research areas, which become driving force of further development of communications technologies. Aiming at the world's best performance has been also one of the major driving forces of R&D, and its resulting outputs lead to the stimulation of the R&D itself in turn. The objective of the special section is to publish *position papers*, which exhibit novel ideas and/or significant achievements leading to such innovative technologies.

3. Published Papers

We have received 14 papers, and have selected the following 2 papers for publication after the strictly fair review process.

Paper Title: Proposal of a New Disk-Repeater System for Contactless Power Transfer
Author: Yuichi Sawahara, Yuya Ikuta, Yangiun Zhang, Toshio Ishizaki, and Ikuo Awai

This paper proposes a new structure for contactless power transfer (CPT) system called "Disk-repeater". The proposed “Disk-repeater” has a very simple structure comprised of just copper plates and wire, on the basis of guide effect of non-radiating electric filed. In this paper, at first, configuration of the transmission system using Disk-repeater is shown. Then, basic investigation of Disk-repeater is carried out to clarify its characteristics. It is explained by several experimental evidences that Disk-repeater and resonator are not magnetically coupled but electrically coupled. Then, this paper shows two-dimensional arrangement of multiple disks followed by proposal of various applications. The proposed system can improve coupling coefficient by appropriate guide of non-radiating field.

Paper Title: A Routing-Based Mobility Management Scheme for IoT Devices in Wireless Mobile Networks
Author: Masanori Ishino, Yuki Koizumi, and Toru Hasegawa

This paper focuses on communication patterns from Internet of Things (IoT) devices and proposes a new routing-based mobility management scheme for IoT devices in order to reduce the size of routing information. This mobility management scheme adopts routing information aggregation scheme using the Bloom Filter as a data structure to store routing information at routers. The Bloom Filter enables to reduce the routing information size at the cost of its impreciseness, i.e., their false positive probability. The effectiveness of the scheme is clarified in IoT environments with a large number of IoT devices, and its deployment issues are discussed.

All these papers are available by open access through the website of the IEICE Transactions on Communications (http://www.ieice.org/cs/jpn/EB/index.html).

4. Announcement of New Regular Category

The IEICE Transactions on Communications established a new regular category of POSITION PAPER, and started accepting submissions of POSITION PAPERs in October 1, 2015. The papers including novel ideas and paradigms for further development of communication technologies will appear as POSITION PAPERs in the future issues of IEICE Transactions on Communications.

Acknowledgement We appreciate all the support we received from the authors, the reviewers, the editors, and the IEICE publishing office.

Report on the 9th International Workshop on Cooperative and Heterogeneous Networks for 5G (WDN-CN2015 Autumn)

Gia Khanh Tran
Tokyo Institute of Technology, Japan

1. Introduction

Following the successful events of the International Wireless Distributed Network (WDN) workshop on Cooperative and Heterogeneous Networks previously held in Cannes France in 2008, Tokyo Japan in 2009, Istanbul Turkey in 2010, Toronto Canada in 2011, Sydney Australia in 2012, London England in 2013, Washington USA in 2014 and New Orleans USA in 2015 [1] respectively, the 9th workshop (WDN-CN2015 Autumn) technically co-sponsored by IEICE-CS, MiWEBA [2] and MiWaveS [3] was held in conjunction with IEEE International Symposium on Personal, Indoor, and Mobile Radio Communications (PIMRC2015) on 30th August 2015 in Hong Kong, China. This workshop especially focused on the current hot topic of 5G technologies.

2. Workshop Committee

General co-chairs are Prof. Kei Sakaguchi from Tokyo Institute of Technology (Japan), Dr. Emilio Calvanese Strinati from CEA-LETI (France) and Dr. Thomas Haustein from Fraunhofer HHI, (Germany).

3. Scope and Objectives

The use of heterogeneous networks (HetNets) is envisioned to enable next-generation 5G networks to provide high data rates, allow offloading traffic from the macro cell, minimizing energy consumption and providing dedicated capacity to homes, enterprises, or urban hotspots. This workshop, which is a progression of the previous successful editions, provides again an opportunity for academic and industrial researchers for promoting HetNets including the emerging mm-wave communication technologies in 5G cellular networks to be more energy efficient and more area spectrally efficient than they are today.

4. Summary of WDN-CN2015 Autumn

WDN-CN2015 Autumn was held at Hong Kong Convention and Exhibition Centre, which locates at the heart of the city on the waterfront of famous Victoria Harbour. The workshop was divided into two sessions including 6 accepted papers and 1 keynote speech. In the opening, the author, who serves as one of the TPC co-chairs of the workshop, briefly explained the scope of WDN-CN2015 Autumn and introduced the program.

The workshop was started with a keynote speech with title “5G Concept and Realization Approach toward 2020 and Beyond” given by Dr. Yoshihisa Kishiyama (NTT DOCOMO, Japan). The speaker has been involved in research and standardization activities for 4G LTE/LTE-Advanced and he is currently involving in 5G radio access network research including massive MIMO/beamforming technologies, non-orthogonal multiple access (NOMA) and 5G experimental trials. The speaker first pointed out that LTE has become the mainstream of mobile technologies, and global expectations for the next generation mobile technology 5G are rapidly growing toward 2020 and beyond. After that, the speaker introduced the company’s technical viewpoint on the concept of 5G, which would be the combination of LTE enhancements and new RAT. The proposed concept can enable 5G to efficiently support variable use cases such as Internet of Things (IoT) and enhanced mobile broadband (eMBB) by using a wider range of frequency bands including below 6GHz (cmWave) and above 6 GHz (mmWave). Dr. Kishiyama also presented the company’s 5G evolution strategy called "phased approach" considering standardization time plan and system deployment migration for 2020 and beyond. Finally, by using a developed system level simulator, the speaker introduced NTT DOCOMO’s recent R&D activities including experimental trials. The keynote speech received several questions from the audiences including Prof. Seiichi Sampei (Osaka Univ.) on whether 5G is needed to consider lifelong low-power applications. Based on the answer to the audiences, the speaker also suggested that mmWave will only be introduced in the latter phase of 5G.

In addition to the keynote speech, there were two technical sessions included six accepted papers for presentations. The presenters talked about several issues and their last research achievements in the area of HetNets and 5G networks, including green 5G HetNet design based on dynamic cell activation and user association, obstacle avoidance cell discovery for 5G networks employing mm-wave directive antennas, cell and user virtualization for ultra dense networks, joint base station operation and user association in cloud based HetNet with hybrid energy sources, optimal macrocell partitioning for redistributed fractional frequency reuse, and performance evaluation of isolated mm-wave smallcells.

5. References

[1] www.icwdn.org
[2] www.miweba.eu
[3] www.miwaves.eu

Report on 10th Asia-Pacific Symposium on Information and Telecommunication Technologies (APSITT 2015)

Yuminobu Igarashi, Hiroto Nomura, and Hidetsugu Kobayashi
APSITT2015 Organizing Committee

1. Introduction

The 10th Asia-Pacific Symposium on Information and Telecommunication Technologies (APSITT2015) was successfully held at Colombo, Democratic Socialist Republic of Sri Lanka.

2. Concept and Brief History of APSITT

APSITT is aiming to the prosperity of Asia-Pacific region by presenting the opportunities of academic forum for mutual understanding and friendship among researchers and leaders in this region. Since 1993, APSITT has been held as follows:

1st: Nov. 1993, Bangkok, Thailand
2nd: Mar. 1997, Hanoi, Viet Nam
3rd: Aug. 1999, Ulaanbaatar, Mongolia
4th: Nov. 2001, Kathmandu, Nepal
(video conference with Atami, Japan)
5th: Nov. 2003, Noumea, New Caledonia
6th: Nov. 2005, Myanmar Info-Tech, Myanmar
7th: Apr. 2008, Bandos Island, Maldives
8th: Jun. 2010, Damai Beach Resort, Malaysia
9th: Nov. 2012, Santiago and Valparaíso, Republic of Chile

3. Overview

The key facts and statistics on APSITT 2015 are as follows:

- Sponsor:
  IEICE Communications Society
- Technical Co-Sponsor:
  IEEE Communications Society
- Organizers:
  Technical Committee on Information Networks
  Technical Committee on Network Systems
  Technical Committee on Communication Systems
- Supporters:
  University of Moratuwa
  University of Peradeniya
- Conference Dates: Aug. 4th – 7th, 2015.
- Conference Venue:
  Cinnamon Lakeside Colombo, Colombo, Sri Lanka
- Participants: 90 persons
- Invited speakers: 6 persons
- Selected session speakers: 25 persons
- Regular session speakers: 28 persons
- Submitted papers: 55 papers / 2 countries

4. Opening and Invited Sessions

On Aug. 4th, Mr. Hidetsugu Kobayashi (Organizing Committee Co-Chair / APSITT2015, NTT, Japan,) conducted the Opening Session. In this session, opening remarks were given by Prof. Ajith Pasqual (General Co-Chair / APSITT2015, University of Moratuwa, Sri Lanka) and Prof. Tohru Asami (General Co-Chair / APSITT2015, University of Tokyo, Japan). Prof. Pasqual introduced Sri Lanka as a beautiful and mysterious island country with its historical backgrounds. He also mentioned about recent mobile communication and engineering education environments which are rapidly developing in the country. Prof. Asami provided a talk on the future perspective of resilient and green network technology by referring to the current progress of telecommunication technologies.

The invited sessions presented by six speakers from both Sri Lanka and Japan followed the opening session. Prof. Chandrasiri Naiwala P. (Kogakuin University, Japan) chaired the Invited Session 1. Dr. Udana Bandara (Rakuten Inc., Japan) gave the first talk entitled "Reimagining Commerce in the Mobile First World", in which he showed his perspectives on the key technologies and business models for reshaping online and offline shopping. The second speaker Dr. Danushka Bollegala (University of Liverpool, UK) gave a talk with the title "Artificial Intelligence - Done and Dusted?" He provided us an interesting story of Artificial Intelligence (AI) history and his profound insight to the current AI bubble phenomenon.

After break, Dr. Udana chaired the Invited Session 2. In the session, Prof. Fumiyuki Adachi (Tohoku University, Japan) had a talk entitled "Small-cell Structured Wireless Network for 5G Mobile Communications." He mentioned how to build a heterogeneous network (HetNet) from many small cells for spectrum- and energy-efficient wireless network. His presentation called a lot of interest from other participants. The next talk by Dr. Manodha Gamage (Intelligent Solutions and Consultancy (Pvt.) Ltd., Sri Lanka) was related to HetNets as well. Its title was "Self - Organizing Networks (SON) for Complicated Heterogeneous Mobile Networks". With his advanced experience in telecommunication area, he proposed the Self Organizing Networks (SON) concept for managing today's complicated mobile networks. The fifth talk

was "Open Innovation and International Standardization in ICT area" by Dr. Tetsuya Yokotani (Mitsubishi Electric Co., Japan, Technical Program Committee (TPC) Co-Chair / APSITT2015). He talked about the importance of international standardization activity for open innovation in ICT area with practical examples in his activities. Lastly, Mr. Kenichiro Matsumoto (NTT, Japan) introduced the new network architecture concept NetroSphere, which was recently announced by NTT, for carrier telecommunication services.

The first conference day was closed with the Banquet Dinner, where Dr. Yuji Inoue (Toyota Info Technology Center, Japan) showed the episode behind choosing Sri Lanka for this APSITT venue.

5. Technical Sessions

53 papers were presented through six each of Selected and Regular Sessions. The Selected Session papers were mainly chosen by means of the peer-review process of full paper submissions. The selected papers will be published on the IEEE Xplore as well as the APSITT2015 proceedings. On the other hand, Regular Session papers were appeared only on the APSITT2015 proceedings.

The list of the technical session fields is shown below. From this APSITT, Technical Committee on Communication Systems (CS) has joined as TPC members. The session themes reflected broad technical interests of the three technical committees ranging from network transmission technologies to network applications and security.

- Wireless: 9 papers
- Network Security and Management: 4 papers
- Optical Network: 4 papers
- Application: 8 papers
- Traffic: 4 papers
- Optical Network: 5 papers
- Ubiquitous Application: 5 papers
- Resilient Network: 5 papers
- Wireless & Application: 5 papers
- Security: 4 papers

6. Campus Visit Tour and Intercommunion

On the third day of the conference, we had an opportunity to visit one of the primal state universities in Sri Lanka, University of Peradeniya, thanks to a great help of Prof. Janaka Ekanayake. The university is located next to the old Kingdom capital city, Kandy. About 50 participants of APSITT were warmly welcomed by the university students and staff. During roughly two hours visit, we could see and know about education environment of electrical and electronic engineering in the university. The students explained us about their well-maintained laboratory equipment, some of which were subsidized from Japan.

In addition, Prof. Pasqual and their students from University of Moratuwa not only gave us a lot of help to organize and operate this conference, but also held a demonstration on their research output of FPGA based 4K video decoding system at the conference site and had lively discussions with our participants.

7. Conclusion

In this conference, we rediscovered the long lasting good relationship between Sri Lanka and Japan. What is noteworthy is that many of guest speakers, chairs and committee members have an experience of studying in Japan and can speak Japanese. All local Sri Lankan people were kind and friendly toward the Japanese.

For some Japanese participants, they knew for the first time the fact that H. E. J. R. Jayawardhana, former Sri Lankan President, helped Japan from divided governance, by his famous delivery quoting the Buddha's Teaching at the San Francisco Peace Conference in 1951. They seemed to be inspired with many thoughts because the conference date was near the 70th anniversary of the end of World War II. We all have to appreciate for the all efforts and contributions to the current prosperity and successful relationship between both countries.

Further information on APSITT2015 is available at the following URLs.

- APSITT 2015: http://www.ieice.org/cs/in/APSITT/2015/
- Technical Committee on Information Networks: http:// www.ieice.org/cs/in/jpn/
- Technical Committee on Network Systems: http://www.ieice.org/cs/ns/jpn/
- Technical Committee on Communication Systems: http://www.ieice.org/cs/cs/jpn/
- IEICE Global Plaza no.80 Hot Topics

APSITT2015 received supportive funding from IEICE Communication Society and KDDI Foundation.

Fig. 1 General Co-Chairs and Banquet Dinner

Fig. 2 Campus Visit and On-site Demonstration by Students

Report on OECC 2015

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1. Introduction

OptoElectronics and Communications Conference (OECC) is one of the biggest worldwide conference on latest optical and photonic research areas. OECC 2015 was held in Shanghai Everbright Convention Center, Shanghai, China, from June 28th to July 2nd 2015. The conference provided a platform for worldwide researchers to share their latest research advances and promoted the international collaboration.

The conference was sponsored by IEICE Communications Society, IEEE Photonics Society, IEEE Photonics Society Shanghai Chapter, IEEE Communications Society Shanghai Chapter, China Institute of Communications and Optical Society of Korea.

2. Program of OECC 2015

The statistical information of OECC 2015 is summarized in Table 1.

Table 1. Statistical information of OECC 2015

Submitted papers	470
Submitted contributed papers	327
Accepted contributed papers	205 (62.7%)
Oral presentation (incl. invited)	276
Poster presentation	53

There were 470 submissions in total including 327 contributed submissions from 33 countries or regions all over the world. The accepted contributed papers are 205 corresponding to an acceptance ratio of 62.7%. Each paper was at least reviewed by three peer reviewers. 152 oral presentations, 124 invited presentations and 53 posters were arranged to 8 categories, 2 symposia and 2 workshops listed below:

Categories

C1 Optical Transmission Systems and Subsystems
C2 Optical Networking and Switching Technologies
C3 Optical Fibers, Cables, Devices and Modules
C4 Optical Fiber Sensors and Microwave Photonics
C5 Laser Technologies and Applications
C6 Micro/Nano Photonic Devices and Integration
C7 Biomedical Optics
C8 Optoelectronic Materials for Communications, Display and Energy

Symposia

S1 Optical Wireless Communications
S2 Frontier in Stimulated Brillouin scattering
S3 Design and fabrication technology for photonics electronics convergence
S4 Hybrid nanophotonics

Workshops

W1 Optical Sampling and Photonic Analog-to-digital Converters
W2 Photonics of Two-dimensional Materials

Two workshops were organized in the afternoon on June 28th. The opening ceremony was organized in the morning on June 29th followed by three plenary presentations (Fig.1). The first plenary presentation was given by Prof. B. Jalali from UCLA on the topic of Optical Information Capacity of Silicon. The second plenary presentation was given by Dr. Atsushi Takahara from NTT Network Innovation Laboratories on the topic of Next Challenges with Virtualization of Network Infrastructure. The third plenary presentation was given by Prof. Chao-Yang Lu from University of Science and Technology of China on the topic of Recent Experimental Progress in Quantum Information Processing with Photons and Cold Atoms.

In the technical sessions, there were 64 parallel oral sessions (Fig.2) and 1 poster session (Fig.3) during the during the conference period. Among 64 oral sessions, there were 10 symposia sessions covering the topics of optical wireless communications, stimulated Brillouin scattering, photonics electronics devices and nanophotonics.

The Post Deadline Paper (PDP) presentations were organized in the evening on June 30th. Four post deadline papers were accepted after the revision of technical committee members. They were “Record Field Demonstration of C-band Multi-Terabit 16QAM, 32QAM and 64QAM over 762km of SSMF” by Rahman, Coriant R&D GmbH, Germany, “What is the True Value of Dynamic Optical Path Switching?” by Kurosu, NIAIST, Japan, “First Demonstration of Holistically-organized Metro-embedded Cloud Platform with All-optical Interconnections for Virtual” by Chen, BUPT, China and “4 × 28 Gbaud PAM4 Integrated ROSA with High-Sensitivity APD Datacenter Provisioning” by Nakanishi, NTT Corporation, Japan.

In the evening of July 1st, the banquet was arranged. During the banquet, best student papers were awarded to three students. A review of past 20 OECC conferences by sand painting was made successfully. Chinese traditional Sichuan face-changing were also performed.

Fig. 1 Plenary presentation

Fig. 2 Oral session

Fig. 3 Poster session

3. Conclusions

OECC 2015 was closed with great success. 470 of total submissions were obtained for TPC to review. Among of those submissions, three biggest submissions countries/regions are China mainland, Japan, and USA. Finally, 403 participants including 206 non-Chinese nationality participants (~51%) have participated the conference this year at Shanghai, China. 3 plenary talks, 124 invited presentations, 152 oral presentations and 53 posters were arranged. 4 PDP presentations were selected, however, there are still 6 no-show presentations, including 2 posters, happened this year.

OECC/PS 2016 to be held in Toki Messe, Japan was promoted to all participants on July 1st, 2015, one fantastic banquet night at Shanghai!

Report on 17th Asia-Pacific Network Operations and Management Symposium (APNOMS 2015)

Satoshi Yamazaki* and Toshio Tonouchi**
*Secretary of APNOMS 2015, NEC
**Vice Chair of APNOMS 2015, NEC

1. Overview of APNOMS 2015

The 17th Asia-Pacific Network Operations and Management Symposium was held from August 19th to 21st, 2015 in Korea [1]. APNOMS 2015 was organized by the IEICE ICM Committee, and the Korean Information and Communications Society, Korean Network Operations and Management Committee (KICS KNOM). It was technically cosponsored by IEEE Comsoc. Supporting organizations were IEEE CNOM, Busan Tourism Organization. APNOMS 2015 entitled "Managing a Very Connected World" consists of five keynote speeches, one DEP session, two special sessions, four tutorial sessions, nine technical sessions, three poster sessions, two innovation sessions and the exhibition program. 182 people from 9 countries participated in this conference.

2. Sessions and Activities

Five executives delivered keynote speeches. Dr. Dongmyun Lee, from KT gave a speech on "Towards 5G Unified Network". Dr. Jeffrey Voas, from NIST introduced a "Why is IoT Definitionless?". Prof. Jenn-Hwan Tarng, from ITRI showed "Connected Health: The Driver to Transform Health Services". Dr. Hyun Kyu Chung, from ETRI gave a speech on "Enabling Technologies on 5G mobile Access – Revolution or Evolution?". Mr. Satoru Taniguchi, from Toyota InfoTechnology Center introduced "Future Mobility Society using Information Technologies".

In the Distinguished Experts Panel session, a chair and four panelists, including Dr. Shingo Fujimoto from Fujitsu Laboratories, discussed various topics with the audience in relation to the theme of APNOMS 2015, for example, management issues of IoT .

In the tutorial sessions, an overview of ID-based communications was presented by Dr. Yusuke Fukushima from NICT. In the special sessions, Mr. Yasuhide Matsumoto from Fujitsu Laboratories introduced the hypothesis of IoT impact and proposed ICT architecture and management technology for IoT impact.

A total of 129 papers, including 20 papers from Japan were submitted to APNOMS 2015 and of these 38 were presented in nine technical sessions. It includes 9 papers from Japan. In the poster session, 69 papers including 6 Japanese papers were delivered as poster-style presentations. These papers were published in IEICE I-Scover and IEEE Xplore. There were two innovation sessions that covered 8 topics. In the exhibition program, four organizations demonstrated prototypes of their research results.

Fig. 1 Conference organizers

Fig. 2 Best paper Award giving ceremony

Lastly, the APNOMS 2015 organizing committee selected the top four papers with the highest overall (paper + presentation) scores from the technical session for "Best Paper Awards". One of awardees is Mr. Tomonobu Niwa from KDDI, who presented "Universal Fault Detection Technique for NFV using SOM-based Clustering" and the others are a Korean, a Taiwanese, and a Chinese student.

3. Conclusion

On behalf of all organizing committee members of APNOMS 2015, we would like to express our appreciations to all parties involved in this conference. The next APNOMS will be held in Kanazawa, Japan, in September 2016.

4. Reference

[1] http://cnlab.kmu.ac.kr/apnoms2015/, Home page of APNOMS.

Report on the 7th International Conference on Ubiquitous and Future Networks (ICUFN) 2015

Yeong Min Jang*, Sangheon Pack**
*Organizing Co-Chair of ICUFN 2015, **Coordinator of ICUFN 2015

1. Introduction

The 7th International Conference on Ubiquitous and Future Networks (ICUFN) 2015 was held at Sapporo, Japan, from July 7th to 10th, 2015. This conference was supported by Korean Institute of Communications and Information Sciences (KICS) and technically cosponsored by the IEEE Communication Society and IEICE Communications Society.

2. Organization

The organizing committee of ICUFN 2015 was formed with the Honorary Conference Co-Chairs, Ramjee Prasad (Aalborg Univ., Denmark) and Sang Hong Lee (IITP, Korea) and the Organizing Co-Chairs, Yeong Min Jang (Kookmin Univ., Korea), C. K. Toh (National Tsing Hua Univ., Taiwan), Masahiro Umehira (Ibaraki University, Japan).

The technical program was organized by Technical Program Committee Co-Chairs, Eui-Nam Huh (Kyung Hee University, Korea), Xin WANG (Fudan Univ., China), Takeo Fujii (Univ. of Electro-Comms, Japan), Masaki Aida (Tokyo Metropolitan Univ., Japan), Kun Yang (Univ. of Essex, UK), and Edmund Yeh (Northeastern Univ., USA). More than 190 technical program committee (TPC) members were involved in the review process.

3. Conference Program

The conference consists of one opening session, two keynote speeches, and 48 technical sessions. The opening session was started with a brief introduction by Prof. Yeong Min Jang (Organizing Co-Chair), following with two welcome addresses by Prof. Masahiro Umehira (President of IEICE-CS) and Prof. Jong-Seon No (President of KICS).

After that, two keynote speeches from Prof. Ramjee Prasad (Aalborg Univ., Denmark) and Prof. Hiroyuki Morikawa (The University of Tokyo, Japan) were delivered. In the technical sessions, we had 210 presentations with approximately 230 participants from more than 22 countries of the world, such as Japan, Korea, Taiwan, China, Italy, Finland, USA, and so on. With regard to these technical sessions, there were 48 sessions, including five workshops and special sessions and the program covering a variety of topics on wireless and wired communication and networking technologies, including cognitive radios, wireless sensor networks, Internet of Things (IoT), broadband wireless communications, future network issues, mobile multimedia networking, Big data, Cloud computing, and other important technologies.

The Welcome Reception and Banquet were held in July 8th and July 9th, respectively. At the banquet, Prof. Byeong Gi Lee (Seoul National Univ., Korea) who is a former president of IEEE Communications Society,

Fig. 1 After Opening Session

delivered a banquet speech on emerging communications technologies for future hyper-connected IoT. The best and excellent paper award ceremony was held simultaneously during the banquet session.

- Best Paper Award
  - "Scheduling Over Dissimilar Paths Using CMT-SCTP," Imtiaz A. Halepoto, Francis C.M. Lau and Zhixiong Niu (The University of Hong Kong, Hong Kong)

- Excellent Paper Award
  - "On the Performance of Multiuser Beam Selection at Base Station and User Arrays in mm-Wave Systems," Jinho Choi (Gwangju Institute of Science and Technology (GIST), Korea)
  - "A Mobility-Aware Approach for Maintaining Data Consistency in Unstructured Mobile P2P Systems," Chuan-Chi Lai and Chuan-Ming Liu (National Taipei University of Technology, Taiwan)
  - "Evaluation of a Delay-Tolerant ICN Architecture," Hasnain Lakhani, Timothy McCarthy and Minyoung Kim (SRI International, USA); David Wilkins (SRI, USA) Samuel Wood University of California Santa Cruz, USA)

4. Conclusion

We believe that ICUFN 2015 was a truly successful conference in the area of communication and networking. On behalf of the organizing committee, we would like to thank our sponsors, KICS, IEEE Communications Society, and IEICE-CS for their kind support to this successful event. In addition, it is our pleasure to announce that ICUFN 2016 will be held on July 5th to July 8th, in Vienna, Austria (for more details, please visit http://www.icufn.org/main/).The number of each author's affiliation is requested to be one. (e.g. either one of university/company or a role in IEICE-CS).

IEICE-CS Related Conferences Calendar

Date	Conference Name	Location	Note
24 Oct. - 28 Oct. 2016	International Symposium on Antennas and Propagation (**ISAP2016**)	Okinawa, Japan	Submission deadline: 22 Apr. 2016
3 Jul. - 7 Jul. 2016	21st Optoelectronics and Communications Conference / International Conference on Photonics in Switching 2016 (**OECC/PS 2016**)	Niigata Japan	Submission deadline: 29 Feb. 2016
14 Jun. - 17 Jun. 2016	2016 IEEE 17th International Conference on High Performance Switching and Routing (**IEEE HPSR 2016**)	Yokohama Japan	Submission deadline: 30 Jan. 2016
22 Nov. – 25 Nov. 2015	4th International Conference on Renewable Energy Research and Applications (**ICRERA2015**)	Palermo, Italy	Done
17 Nov. - 19 Nov. 2015	The 4th ENRI International Workshop on ATM/CNS (**EIWAC2015**)	Tokyo, Japan	Done
9 Nov. - 12 Nov. 2015	2015 International Symposium on Antennas and Propagation (**ISAP2015**)	Tasmania, Australia	Done
18 Oct. - 22 Oct. 2015	37th IEEE International Telecommunication Energy Conference (**INTELEC 2015**)	Osaka, Japan	Done
14 Oct. - 16 Oct. 2015	The 21st Asia-Pacific Conference on Communications (**APCC2015**)	Kyoto, Japan	Done
30 Aug. 2015	The 9th International WDN Workshop on Cooperative and Heterogeneous Cellular Networks for 5G (**WDN-CN2015 Autumn**)	Hong Kong, China	**Reported** on this issue
19 Aug. - 20 Aug. 2015	Asia-Pacific Network Operations and Management Symposium (**APNOMS 2015**)	Busan, Korea	**Reported** on this issue
4 Aug. - 7 Aug. 2015	10th Asia-Pacific Symposium on Information and Telecommunication Technologies (**APSITT2015**)	Colombo, Sri Lanka	**Reported** on this issue
13 Jul. - 15 Jul. 2015	International Symposium on Ultrafast Photonic Technologies and Extremely Advanced Transmission Technologies 2015 (**ISUPT/EXAT 2015**)	Kyoto, Japan	**Reported** on this issue
7 Jul. - 10 Jul. 2015	International Conference on Ubiquitous and Future Networks 2015 (**ICUFN 2015**)	Sapporo, Japan	**Reported** on this issue
28 Jun. - 2 Jul. 2015	OptoElectronics and Communications Conference 2015 (**OECC 2015**)	Shanghai, China	**Reported** on this issue

Please confirm with the following IEICE-CS web site for the latest information.
http://www.ieice.org/cs/conf/calendar.html

Special Section Calendar of IEICE Transactions on Communications

Issue	Special Section	Note
Nov. 2016	Deepening and Expanding of Information Network Science	Submission due**:** 18 March 2016 **See page 36**
Oct. 2016	Satellite Communication Technologies in Conjunction with Main Topics of JC-SAT2015	Submission due**:** 12 February 2016 **See page 35**
Sep. 2016	Integration Technologies of Ambient Intelligence and Sensor Networks	Submission due**:** 8 January 2016 **See page 34**
Aug. 2016	Advanced Information and Communication Technologies and Services in Conjunction with Main Topics of APCC2015	Submission due**:** 1 December 2015 **See page 33**
Jul. 2016	No special section in this issue	
Jun. 2016	European ICT R&D Project Activities on Broadband Access Technologies in Conjunction with Main Topics of 2015 IEICE ICT Forum	To be issued
May 2016	Internet Architectures and Management Methods that Enable Flexible and Secure Deployment of Network Services	To be issued
Apr. 2016	Autonomous Decentralized Systems Technologies and Applications for Next-Generation Social Infrastructure	To be issued
Mar. 2016	Information and Communication Technology for Healthcare and Medical Applications in Conjunction with Main Topics of ISMICT2015	To be issued
Feb. 2016	Management for the Era of Internet of Things and Big Data	To be issued **soon**
Jan. 2016	Recent Progress in Antennas, Propagation and Wireless Systems Related to Topics in ISAP2014	To be issued **soon**
Dec. 2015	No special section in this issue	
Nov. 2015	No special section in this issue	
Oct. 2015	5G Radio Access Networks [Part II] Multi-RAT Heterogeneous Networks and Smart Radio Technologies	Vol. E98-B, No.10
Sep. 2015	Emerging Technologies on Ambient Sensor Networks toward Future Generation	Vol. E98-B, No.9
Aug. 2015	5G Radio Access Networks [Part I] Radio Access Technologies and System Design	Vol. E98-B, No.8
Jul. 2015	Electromagnetic Compatibility Technology in Conjunction with Main Topics of EMC'14/Tokyo	Vol. E98-B, No.7
Jun. 2015	No special section in this issue	

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Call for Papers

------- Special Section on Advanced Information and Communication Technologies and Services in Conjunction with Main Topics of APCC2015 -------

The IEICE Transactions on Communications announces that it will publish a special section entitled "Special Section on Advanced Information and Communication Technologies and Services in Conjunction with Main Topics of APCC2015" in the **August 2016** issue**.**

While globalization progresses beyond the border, the importance of the role of the Asia-Pacific region has been increasing more and more in the development of telecommunications technology. Under such circumstances, APCC (Asia-Pacific Conference on Communications) is held every year for the purpose of providing an opportunity to young researchers and students of the telecommunications sector in the Asia-Pacific region countries to present their research achievements, exchange future views and opinions, and promote people-to-people exchanges among researchers. We also have contributed to improve the level of advanced research. In conjunction with the opportunity of APCC2015 organized by the IEICE Communications Society, special section is being planned (scheduled to appear in the August 2016 issue). We prospect for the future outlook the state-of-the-art telecommunications technology and further promote research and development of the information and communication technologies and services in the Asia-Pacific region. The special section solicits paper submission particularly from, but not restricted to, researchers who presented their original works in APCC2015.

1. Scope

This special section aims at timely dissemination of research in these areas. Possible topics include, but are not limited to:

(1) Wireless communication technologies
4G/5G mobile networks, Broadband wireless access, WLAN/WPAN, Cognitive radio, Software radio, Antennas and propagations, Satellite and space communications

(2) Optical communication technologies
Optical fiber, Optical communication system, Photonic network

(3) Network technologies
Social networks, Network and service management, Overlay networks, M2M/P2P networks, Software defined networks

(4) Fundamental technologies for communication
Green communications, Advanced modulation and coding, Speech and video signal processing, Information and communication theory, Broadcasting technologies

2. Submission Instructions

The standard number of pages is 8. The page charges are considerably higher for extra pages. Manuscripts should be prepared according to the guideline in the "Information for Authors." The latest version is available at the web site, http://www.ieice.org/eng/shiori/mokuji_cs.html. The term for revising the manuscript after acknowledgement of conditional acceptance for this special section could be shorter than that for regular issues (60 days) because of the tight review schedule.

This special section will accept papers only by electronic submission. Submit a manuscript and electronic source files (LaTeX/Word files, figures, authors' photos and biographies) via the IEICE Web site https://review.ieice.org/regist/regist_baseinfo_e.aspx by **December 1st, 2015 (JST)**. Authors should choose the Advanced Information and Communication Technologies and Services in Conjunction with Main Topics of APCC2015 as a "Journal/Section" on the online screen. Do not choose [Regular EB].

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3. Special Section Editorial Committee

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Call for Papers

--- Special Section on Integration Technologies of Ambient Intelligence and Sensor Networks ---

The IEICE Transactions on Communications announces that it will publish a special section entitled "Special Section on Integration Technologies of Ambient Intelligence and Sensor Networks " in the **September 2016** issue.

Sensor networks enable gathering ambient information from peoples, products, and sensing devices for real space. Sensing data should be processed, analyzed, and applied for enhancement or assistance for human activities, which is called ambient intelligence. Ambient sensor networks (ASNs) are the sensor networks interactively cooperating with ambient intelligence. It is expected that gentle social environments such as efficient electric power usage in smart grids and effective transportation systems will be established through the ambient sensor networks. Applied researches have been promoted in the field of technologies supporting the ambient sensor networks. Toward future generation, it is important to support such progressing technologies and promote further collaboration with other fields. From the above points of view, the special section is planned (scheduled to appear in the September 2015 issue) to publish papers on the related fields.

1. Scope

The scope of this special section includes not only information and communication research fields but also its multidisciplinary research with agriculture, forestry and fisheries industry fields, industry fields including incineration and power-generator plants, and service fields such as health-care, medical-care, and circulations because they are important and major applications for the ASNs. Possible topics include, but are not limited to:

- Space sensing, vital sensing, mobile sensing, participatory sensing, cloud sensing ambient interface, device and appliance technologies, embedded software, sensing and control theory, long distance communication, 5G, millimeter wave communication, near field radio communication.
- MAC/routing protocols, QoS control, multi-hop and cooperative communication, security, cross layer design, energy harvesting, green wireless, communication and network theory.
- Sensor database, context extraction, mining, location-information technology, stream processing, privacy and security, big data, learning signal processing.
- Large scale widening, dependability, cyber physical, operation management, autonomous distributed control.
- Interdisciplinary system applications

  Agriculture, forestry and fishery support systems, disaster prevention and mitigation system, smart space, medical and health systems, industrial support system, social infrastructure system, wide area sensing system

2. Submission Instructions

The standard number of pages is 8. The page charges are considerably higher for extra pages. Manuscripts should be prepared according to the guideline in the "Information for Authors." The latest version is available at the web site, http://www.ieice.org/eng/shiori/mokuji_cs.html. The term for revising the manuscript after acknowledgement of conditional acceptance for this special section could be shorter than that for regular issues (60 days) because of the tight review schedule.

This special section will accept papers only by electronic submission. Submit a manuscript and electronic source files (LaTeX/Word files, figures, authors' photos and biographies) via the IEICE Web site https://review.ieice.org/regist/regist_baseinfo_e.aspx by January 8, 2016 (JST). Authors should choose the Special Section on Integration Technologies of Ambient Intelligence and Sensor Networks as a "Journal/Section" on the online screen. Do not choose [Regular EB].

Contact point:
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Tel: +81-565-48-8121, Email: asn-ss-sec@mail.ieice.org

3. Special Section Editorial Committee

Guest Editor-in-Chief: Hiroshi Tohjo (NTT)

Guest Editors: Naoki Wakamiya (Osaka Univ.), Katsuhiro Naito (Aichi Institute of Technology)

Guest Associate Editors: Susumu Takeuchi (NTT), Hideyuki Kawashima (Univ. of Tsukuba), Masayuki Iwai (Tokyo Denki Univ.), Zhang Bing (NICT), Shunsuke Saruwatari (Shizuoka Univ.), Hiroaki Morino (Shibaura Institute of Technology), Shuichi Igarashi (Hitatchi), Kiyohito Yoshihara (KDDI R&D Lab.), Masahiro Watanabe (Tokyo Univ. of Technology), Jin Mitsugi (Keio Univ.)

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* Please note that if the submitted paper is accepted, all authors, including authors of invited papers, are requested to pay for the page charges covering partial cost of publications.
* At least one of the authors must be an IEICE member when the manuscript is submitted for review. Invited papers are an exception. We recommend that authors unaffiliated with IEICE apply for membership. For membership applications, please visit http://www.ieice.org/eng/member/OM-appli.html

Call for Papers

------- Special Section on Satellite Communication Technologies in Conjunction with Main Topics of JC-SAT2015 -------

The IEICE Transactions on Communications announces that it will publish a special section entitled "Special Section on Satellite Communication Technologies in Conjunction with Main Topics of JC-SAT2015" in the October 2016 issue.

The JC-SAT(Japan-Korea Joint Conference on Satellite Communications) has been held in Japan or Korea from the year of 2000, which intends to provide a forum for researchers in satellite telecommunications field to discuss the current status, technical challenges, standards, fundamental issues, future services, and applications. This conference covers technologies and system implementations of satellite communications as they relate to the areas of fixed, mobile and broadcasting satellite services. This year, the JC-SAT2015 was held in Osaka, Japan on Oct. 7-8, 2015.
By taking this opportunity the Special Section on Satellite Communication Technologies in Conjunction with Main Topics of JC-SAT2015 has been planned to publish articles which are based on the papers presented in the previous JC-SAT including JC-SAT2015. The special section does not limit the submission from the authors of the JC-SAT, and will also receive the submission of the papers on the research which correspond topics of the JC-SAT.
Your contribution to this special section would be greatly appreciated.

1. Scope

This special section aims at timely dissemination of research in these areas. Possible topics include, but are not limited to:

-Satellite communications (fixed-satellite communications, mobile satellite communications, inter-satellite communications, and deep space communications)
-Satellite broadcasting (BS, mobile broadcasting)
-Satellite-ground integrated communications system
-Satellite sensor network
-Unmanned aircraft communications system
-Others on the elementary technologies, the system technologies, and the applications concerning the above topics.

2. Submission Instructions

The standard number of pages is 8. The page charges are considerably higher for extra pages. Manuscripts should be prepared according to the guideline in the "Information for Authors." The latest version is available at the web site, http://www.ieice.org/eng/shiori/mokuji_cs.html. The term for revising the manuscript after acknowledgement of conditional acceptance for this special section could be shorter than that for regular issues (60 days) because of the tight review schedule.

This special section will accept papers only by electronic submission. Submit a manuscript and electronic source files (LaTeX/Word files, figures, authors' photos and biographies) via the IEICE Web site https://review.ieice.org/regist/regist_baseinfo_e.aspx by **February 12, 2016 (JST)**. Authors should choose the [Special-EB] Special Section on Satellite Communication Technologies in Conjunction with Main Topics of JC-SAT2015 as a "Journal/Section" on the online screen. Do not choose [Regular EB].

Contact point:
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3. Special Section Editorial Committee

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Guest Editors: Amane Miura (NICT), Fumihiro Yamashita (NTT)
Guest Associate Editors: Tetsushi Ikegami (Meiji Univ.), Hiroyuki Ohmine (Mitsubishi Electric), Ikuo Oka (Osaka City Univ.), Eiji Okamoto (Nagoya Institute of Technology), Masashi Kamei (NHK), Hirokazu Kobayashi (OIT), Katsuya Nakahira (NTT), Hiroki Nishiyama (Tohoku Univ.), Yasuyuki Maekawa (OECU), Kosuke Yamazaki (KDDI R&D Labs.)

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http://www.ieice.org/eng/member/OM-appli.html

Call for Papers

------- Special Section on Deepening and Expanding of Information Network Science -------

The IEICE Transactions on Communications announces that it will publish a special section entitled "Special Section on Deepening and Expanding of Information Network Science" in the **November 2016** issue**.**

Information networking technologies have been achieving tremendous growth as an indispensable infrastructure in our society. In particular, the recent advances in chip technology have required us to redefine the real world management of massive systems, which might be also complex and presumably made up with a variety of component devices, such as the Internet of Things. However, it is almost impossible to manage and control overall behavior of the whole system merely by knowing and assuming the behavior of its subsystems, such as independent devices or communication protocols being used in the network. Therefore, it is a sort of "recursive" approach that is quite essential for the real world implementation of the next generation networks. In this scenario, we first deepen the academic frameworks themselves for better explaining the onset of nontrivial behavior at macroscopic levels. Then, by applying such frameworks to our system, we reconsider and improve every specification for the components of the network to benefit its system performance, stability, or robustness. For this purpose, we encourage not only multidisciplinary studies around information communication technologies but also a wider spectrum of academic approaches including mathematical engineering, theoretical physics, biological system engineering, computer science, and applied mathematics, etc. Longer or extended version of the works that have been presented at the Korea-Japan Joint Workshop on Complex Communications Sciences (KJCCS2016) will be also welcomed as the submissions. We are thus planning to publish a special section (scheduled to appear in the November 2016 issue) to further promote research and development of progress in information network science.

1. Scope

This special section aims at timely dissemination of research in these areas. Possible topics include, but are not limited to:

-deepening and expanding the frameworks for information network science
-theory of information network as complex systems, or applications to multimedia communication
-novel modeling, performance measure, analyzing methods for information network or multimedia communication
-theory and/or application of network information theory, such as network coding
-theory and/or application of techniques in multimedia communication to information network
-theory of nature-inspired information networking
-theory and/or application of information networking as social networks
-physical systems and devices inspired by network science
-novel network analysis method based on computer science and applied mathematics
-theory and/or application of very large-scale systems including Internet of Things (IoT)
-novel approach to information networks, such as information geometry and statistical mechanics

2. Submission Instructions

The standard number of pages is 8. The page charges are considerably higher for extra pages. Manuscripts should be prepared according to the guideline in the "Information for Authors." The latest version is available at the web site, http://www.ieice.org/eng/shiori/mokuji_cs.html. The term for revising the manuscript after acknowledgement of conditional acceptance for this special section could be shorter than that for regular issues (60 days) because of the tight review schedule.

This special section will accept papers only by electronic submission. Submit a manuscript and electronic source files (LaTeX/Word files, figures, authors' photos and biographies) via the IEICE Web site https://review.ieice.org/regist/regist_baseinfo_e.aspx by **March 18, 2016 (JST)**. Authors should choose the Deepening and Expanding of Information Network Science as a "Journal/Section" on the online screen. Do not choose [Regular EB].

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3. Special Section Editorial Committee

Guest Editor-in-Chief: Hiroyoshi Miwa (Kwansei Gakuin Univ.)
Guest Editors: Tatsuto Murayama (Univ. of Toyama), Hiraku Okada (Nagoya Univ.)
Guest Associate Editors: Takuya Asaka (Tokyo Metropolitan Univ.), Shintaro Arai (Kagawa College), Takeru Inoue (NTT), Masato Uchida (Chiba Inst. Tech.), Eiji Okamoto (Nagoya Inst. Tech.), Asaki Saito (Future Univ.-Hakodate), Shigeki Shiokawa (Kanagawa Inst. Tech.), Won-Joo Hwang (Inje Univ.)

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* Please note that if the submitted paper is accepted, all authors, including authors of invited papers, are requested to pay for the page charges covering partial cost of publications.
* At least one of the authors must be an IEICE member when the manuscript is submitted for review. Invited papers are an exception. We recommend that authors unaffiliated with IEICE apply for membership. For membership applications, please visit http://www.ieice.org/eng/member/OM-appli.html

Welcome to the IEICE Overseas Membership Page URL:http://www.ieice.org/

Membership for Overseas Candidates: Overseas Members may opt to join **one IEICE Society of their choice** and may request to **receive the IEICE Transactions of online version** of that Society. Furthermore, Overseas Members may request to receive the IEICE Journal(written in Japanese) and Transactions (published in paper) at an additional cost. Similar services are available to **Overseas Student Members.** Voting privileges in the IEICE election do not apply to Overseas Members. Note that the Overseas Membership applies only to candidates who reside outside of Japan and who have citizenship in countries other than Japan.

OMDP (Overseas Membership Development Program): OMDP is provided for candidates **from countries/areas in Asia(except Republic of Korea and Taiwan), Africa, Central America, and South America.** This program is designed so that IEICE can contribute to and support the progress of science and technology throughout the world. Scientists and engineers in these countries/areas are encouraged to apply to the program.

● IEICE Societies and Publications

Society	Transactions	Editorial Subject Indexes
A (Fundamentals of Electronics, Communications and Computer Sciences)	EA (English) A (Japanese)	Engineering Acoustics, Noise and Vibration, Speech and Hearing, Ultrasonics, Digital Signal Processing, Analog Signal Processing, Systems and Control, Nonlinear Problems, Circuit Theory, VLSI Design Technology and CAD, Numerical Analysis and Optimization, Algorithms and Data Structures, Graphs and Networks, Reliability, Maintainability and Safety Analysis, Cryptography and Information Security, Information Theory, Coding Theory, Communication Theory and Signals, Spread Spectrum Technologies and Applications, Mobile Information Network and Personal Communications, Intelligent Transport System, Image, Vision, Computer Graphics, Language, Thought, Knowledge and Intelligence, Human Communications, Neural Networks and Bioengineering, Multimedia Environment Technology, Communication Environment and Ethics, Concurrent Systems, Measurement Technology, General Fundamentals and Boundaries
B (Communications)	EB (English) B (Japanese)	Fundamental Theories for Communications, Devices/Circuits for Communications, Transmission Systems and Transmission Equipment for Communications, Optical Fiber for Communications, Fiber-Optic Transmission for Communications, Switching for Communications, Switching for Mobile Communications, Network, Network Management/Operation, Internet, Wireless Communication Technologies, Terrestrial Radio Communications, Satellite Communications, Optical Wireless Communications, Antennas and Propagation, Electromagnetic Compatibility (EMC), Sensing, Navigation, Guidance and Control Systems, Energy in Electronics Communications, Terminals for Communications, Multimedia Systems for Communications, Broadcast Systems, Integrated Systems for Communications, Space Utilization Systems for Communications
C (Electronics)	EC (English) C (Japanese)	Electromagnetic Theory, Lasers, Quantum Electronics, Optoelectronics, Microwaves, Millimeter-Waves, Ultrasonic Electronics, Electronic Circuits, Electronic Materials, Organic Molecular Electronics, Electronic Components, Electromechanical Devices and Components, Semiconductor Materials and Devices, Integrated Electronics, Electron Tubes, Vacuum and Beam Technology, Electronic Displays, Superconducting Electronics, Storage Technology, Electronic Instrumentation and Control
D (Information and Systems)	ED (English) D (Japanese)	Computation and Computational Models, Automata and Formal Language Theory, Algorithm Theory, Complexity Theory, Computer Components, VLSI Systems, Computer Systems, Fundamentals of Software and Theory of Programs, System Programs, Software Engineering, Database, Contents Technology and Web Information Systems, Data Mining, Networks, Dependable Computing, Application Information Security, Distributed Cooperation and Agents, Artificial Intelligence and Cognitive Science, Human-computer Interaction, Office Information Systems, e-Business Modeling, Educational Technology, Rehabilitation Engineering and Assistive Technology, Pattern Recognition, Speech and Hearing, Image Processing and Video Processing, Image Recognition, Computer Vision, Computer Graphics, Multimedia Pattern Processing, Natural Language Processing, Biocybernetics, Neurocomputing, Biological Engineering, Music Information Processing, Kansei Information Processing, Affective Information Processing
Journal of IEICE (written in Japanese only)		

● Membership Charges (http://www.ieice.org/eng/member/OM-appli.html#c)

Basic Membership Charge is as follows. It will change the term when you join IEICE. Please refer to the above website.

Basic Membership Charge (UNIT : Japanese YEN)

		Online Version		Paper Version (optional)
Service coverage for overseas members	Admission charge	Registration of the first society (includes its online version transactions)	Registration of additional societies (includes its online version transactions)	Journal (written in Japanese)
Member (overseas)	1,400	7,000	3,500 / 1society	6,000
Member (overseas) with OMDP*	1,000	5,000	3,000 / 1society	6,000
Student member (overseas)	–	2,000	2,000 / 1society	6,000
Student member (overseas) with OMDP*	–	1,000	1,500 / 1society	6,000

NOTE

1. You need to choose one Society, and you can subscribe Transactions online of your registered society.
*Example: If you want to subscribe to Transaction of EA, please check **Society Registration** as "A", and your membership fee amounts to 7,000 yen / 5,000 yen.*

2. If you want to register other Societies and Transaction of web version, please check "Additional Society registration".
*Example: If you want to subscribe to Transaction of EA and EB, please check **Society Registration** as "A", **Additional Society registration (optional)** as "B". Your membership fee amounts to 7,000+3,500 yen / 5,000+3,000 yen.*

3. If you want to subscribe to one Transaction of paper version, please check "Additional Transaction subscription (published in paper)".
*Example: If you want to subscribe to Transaction of EC in paper version additionally, please check **Society Registration** as "A", and **Additional Transaction subscription (in paper version)** as "C" or as "EC". Your membership fee amounts to 7,000+4,000 yen / 5,000+4,500 yen.*

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Surface mail charge is included in the membership charge. Optional rapid mailing service is available by air mail or surface air lifted (SAL) mail. The additional charge per year periodical depends on the mailing address, as shown in the right table.

Areas	Air mail	SAL mail
Asia; Guam; Midway islands	5,600 yen	3,200 yen
Oceania; Near & Middle East; North & Central America; Europe	7,800 yen	4,400 yen
Africa; South America	11,000 yen	5,600 yen

Please contact the IEICE Membership Section: E-mail:member@ieice.org FAX: +81 3 3433 6659 ***Please fill out the application form printed on the reverse side of this page.***

IEICE Overseas Membership Application Form

URL http://www.ieice.org/eng/member/OM-appli.html **E-mail** member@ieice.org **FAX** +81-3-3433-6659

◆ **Please type or print in English. The deadline for submitting application form is the 1st day of every month.**

Personal Information

Full name: _____ ***Nationality:*** _____ ☐Male ☐Female
First name Middle name Last name

☐Prof. ☐Dr. ☐Mr. ☐Ms. ***Place of birth:*** _____ ***Date of birth:*** _____
Day Month Year

Mailing Address ☐Home ☐Office

Name of Company/School/College Department/Section

Street City State/Province

Postal code Country

TEL FAX E-mail

Academic Background The highest academic degree: ☐Ph.D. ☐Masters ☐Bachelors ☐Others: _____

University/college/school of the highest academic degree Month & year of graduation

(For Student Member) Academic degree which will be conferred on you Month & year when the degree will be conferred on you

Application Information

Membership: I want to apply for the following membership (check one item!)

☐Member (Overseas) ☐Student Member (Overseas)

◆If you want to apply for OMDP, please check; ☐OMDP (Overseas Membership Development Program)

Society registration (Membership fee includes one Society of Transaction of Online version.):

☐A: Engineering Sciences ☐B: Communications ☐C: Electronics ☐D: Information and Systems

Additional Society (optional): ☐A: Engineering Sciences ☐B: Communications ☐C: Electronics ☐D: Information and Systems

Additional Transactions of paper version (optional):

☐EA: Fundamentals ☐EB: Communications ☐EC: Electronics ☐ED: Information and Systems

☐A: Fundamentals (Japanese) ☐B: Communications (Japanese) ☐C: Electronics (Japanese) ☐D: Information and Systems (Japanese)

Journal subscription (optional): ☐(Japanese)

Remittance Remittance is available only in *Japanese yen* by a *credit card*.

Admission charge……¥_____ Journal subscription (optional)……..¥_____

Annual charge……¥_____ Mailing option: ☐Air mail……..……¥_____

Additional Society (optional) …… ¥_____ ☐SAL mail……¥_____

Additional Transactions (optional)……..…¥_____ **Total……..……¥** _____

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Year Month

Endorsement

Endorsements by one IEICE Member application is required. If it is difficult to find endorsers, please contact the IEICE Membership Activities Section by sending this sheet, and we will help you.

I recommend this applicant for IEICE membership.

Endorser's name Membership number Endorser's signature Date

IEICE-CS Overseas Membership with Special Annual Fees for Sister Society Members

To foster the cooperation between the Sister Society and the IEICE Communications Society (IEICE-CS), the Sister Society agreement enables members of each institution to become members of both societies by granting special annual fees.

A 10% - 20% discount* of the annual fees will be granted to the sister society members to become the IEICE-CS overseas members. The discounted fees will be applied for the individual members when the new membership is starting or the current membership is renewing.

* The discount does not apply to the optional items and services i.e. “Additional Society”, “Additional Transactions of paper version” and “Rapid Mailing Service”.

------ Please send the following Sister Society membership information, together with membership application form in the next page. ------

Sister Society membership information

To apply discount rates for this IEICE-CS Sister Society member’s application, please indicate your Sister Society Membership number below, and attach a copy of your Sister Society Membership certificate or card to this form.

Sister Society: ☐IEEE ComSoc ☐KICS ☐VDE-ITG

Membership number (Member):_____

Copy of Membership certificate or Membership card:

(Attached here)

IEICE Overseas Membership Application Form for IEICE-CS Sister Society Members

URL http://www.ieice.org/eng/member/OM-appli.html **E-mail** member@ieice.org **FAX** +81-3-3433-6659

◆ **Please type or print in English. The deadline for submitting application form is the 1st day of every month.**

Personal Information

☐Male ☐Female

Full name: _____ ***Nationality:*** _____

First name Middle name Last name

☐Prof. ☐Dr. ☐Mr. ☐Ms. ***Place of birth:*** _____ ***Date of birth:*** _____

Day Month Year

Mailing Address ☐Home ☐Office

Name of Company/School/College Department/Section

Street City State/Province

Postal code Country

TEL FAX E-mail

Academic Background The highest academic degree: ☐Ph.D. ☐Masters ☐Bachelors ☐Others: _____

University/college/school of the highest academic degree Month & year of graduation

Application Information

Membership: I want to apply for the following membership*:

☐Member ☐Member (including Japanese Journal subscription)

☐Student Member ☐Student Member (including Japanese Journal subscription)

**Membership applies only to applicant who reside outside of Japan and who have non-Japanese citizenship.*

◆If you want to apply for OMDP (Overseas Membership Development Program), please check; ☐OMDP

Society registration (Membership fee** includes one Society of Transaction of Online version.):

☑B: Communications

***Discount rate is applied to this IEICE-CS Sister Society Member's application.*

---------- *Discount rate is not applied for the following optional items.* ----------

Additional Society (optional): ☐A: Engineering Sciences ☐C: Electronics ☐D: Information and Systems

Remittance Remittance is available only in *Japanese yen* by a *credit card*.

Admission charge……¥_____ Journal subscription (optional)……..¥ _____

Annual charge…… ¥_____ Mailing option: ☐Air mail……..……¥_____

Additional Society (optional) …… ¥_____ ☐SAL mail……¥_____

Total……..……¥ _____

Credit Card: ☐UC ☐Master Card ☐VISA ☐JCB ☐American Express

Card number: | | | | | | | | | | | | | | | | |

Expiry date: ____/____ Credit Card Holder: _____ Signature: _____

Year Month

Endorsement *The following endorsement for this Sister Society member's application will be given by an IEICE-CS director (any related action of endorsement by applicant is not necessary if a copy of your Sister Society Membership certificate or card is indicated).*

I recommend this applicant for IEICE membership.

(Director of Planning and Member Activities, IEICE-CS)

Endorser's name Membership number Endorser's signature Date

From Editor's Desk

• Season's greetings

The year 2015 is about to pass away. This year was the International Year of Light. Many events related to optical technologies were held all over the world. Optical technology has important roles also in communications technologies, such as optical fiber communications. When I see the many beautiful LEDs decorating the last month of 2015, I cannot help wishing the further progress of the communication technology in the coming years. I wish you all Happy Holidays and a Happy New Year.

After the winter vacation, please consider submitting a paper to the IEICE General Conference to be held at Kyushu University, Fukuoka, March 15th – 18th, 2016. Complete English Sessions are also scheduled in the conference, to promote globalization of IEICE's academic activities. Fukuoka Prefecture is located in the north part of Kyushu Island and is one of the industrial centers in Japan. Personally, I will never forget the gourmet foods such as Hakata ramen served at "yatai", which is a small mobile food stall. You can enjoy the casual and relaxing atmosphere of yatai after the conference. For more details about the IEICE General Conference 2016, please check out the latest information on the IEICE web site at:

http://www.toyoag.co.jp/ieice/E_G_top/e_g_top.html

IEICE-CS GLOBAL NEWSLETTER Editorial Staff

Editorial Staff of this issue

No special order is observed

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Fumio FUTAMI
Tamagawa University
Quantum ICT Research Institute
Director, International Publication, IEICE Communications Society

Call for Papers

http://www.ieee-hpsr.org/

IEEE 17th International Conference on High Performance Switching and Routing

The 2016 IEEE 17th International Conference on High Performance Switching and Routing (HPSR-2016) will be held at Keio University, Hiyoshi campus, Yokohama, Japan from June 14 to 17, 2016. The conference is sponsored by the IEEE Communications Society and the IEICE Communications Society. This conference will be co-located with 12th International Conference on IP+Optical Network (iPOP).

Keio University is the oldest private university in Japan. Yokohama is a major port city on the south of Tokyo. Past HPSR events were held in Heidelberg (2000), Dallas (2001), Kobe (2002), Torino (2003), Arizona (2004), Hong Kong (2005), Poznan (2006), New York (2007), Shanghai (2008), Paris (2009), Dallas (2010), Cartagena (2011), Belgrade (2012), Taipei (2013), Vancouver (2014), and Budapest (2015).

IEEE HPSR will address numerous challenges of today's data networks, which are being subject to significant changes driven by cloud computing, Internet of things and other new concepts. As a result, new technologies are needed to efficiently and effectively cope with the resulting traffic demands. It is important that researchers gather to share their ideas and progress in solving these future challenges that the Internet as a whole is facing. Most notably, these challenges include narrowing the digital-divide between industrialized and developing countries, offering to the latter all the advantages that come with access to high-speed Internet and the services it provides; handling the bandwidth and delay requirements of multimedia services, P2P, and cloud computing applications; deploying IPv6 and providing smooth migration from IPv4; deploying large datacenters and enhancing their switching capabilities; and achieving high energy efficiency in switching and routing equipment. These are only some of the factors that are driving the demand for switching and routing capabilities that are more intelligent, efficient, and reliable than ever before. Examples of research areas considered in IEEE HPSR 2016 include:

- Architectures of high-performance switches and routers
- High-speed packet processors
- Address lookup algorithms
- Packet classification, scheduling, and dropping
- Switching, bridging, and routing protocols
- Latency and buffer control
- Multicasting
- P2P routing
- Routing in wireless, mobile and sensor networks
- Optical switching and routing
- Switching, bridging, and routing for datacenters and cloud applications
- Software defined networking
- Data placement and migration
- Multiprocessor networks
- Network management
- Pricing, accounting, and charging
- QoS and scalability of switching, bridging, and routing
- Traffic characterization and engineering
- Power-aware switching, bridging, and routing protocols
- Network security

Paper submission guidelines

Submitted papers must be unpublished and should not be under review elsewhere at the same time. Accepted papers should not exceed 6 pages in the two-column IEEE Transactions style. Accepted papers longer than 6 pages will be charged $100 for each extra page (it may be paid in Japanese Yen). Papers cannot be longer than 8 pages. Poster papers are limited to 2 pages in the two-column IEEE Conference style. Papers should be submitted as PDF files through the EDAS system (http://edas.info/newPaper.php?c=21459&track=76346). All submitted papers will be subject to a minimum of three independent reviews.

Important Dates

Full paper submission due: January 30, 2016
Acceptance notifications: April 4, 2016
Camera-ready due: April 18, 2016
Early registration due: April 18, 2016
Conference date: June 14-17, 2016

Chairs and Committees

General Chairs: Naoaki Yamanaka (Keio University), Nirwan Ansari (New Jersey Institute of Technology)
Technical Program Committee Chairs: Eiji Oki (The University of Electro-Communications, Tokyo), Andrea Fumagalli (The University of Texas at Dallas), Aleksandra Smiljanić (Belgrade University)
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Tutorial Chairs: Kohei Shiomoto (NTT), Malathi Veeraraghavan (University of Virginia)
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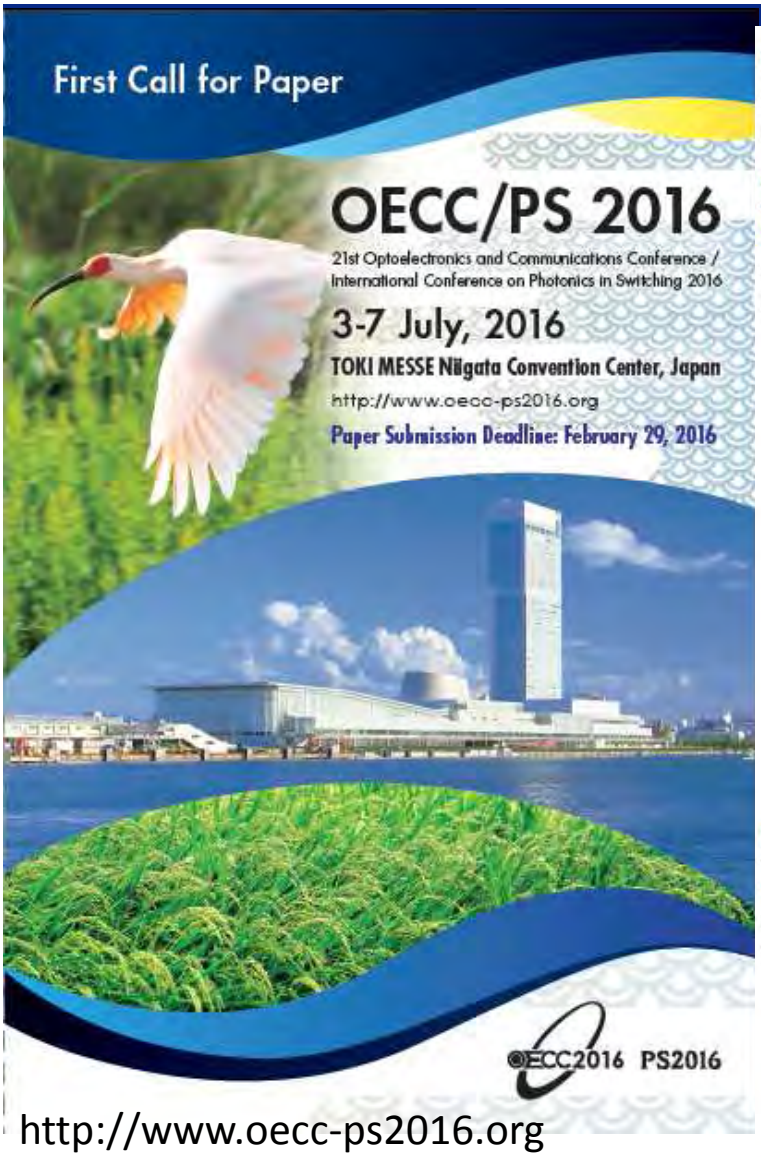

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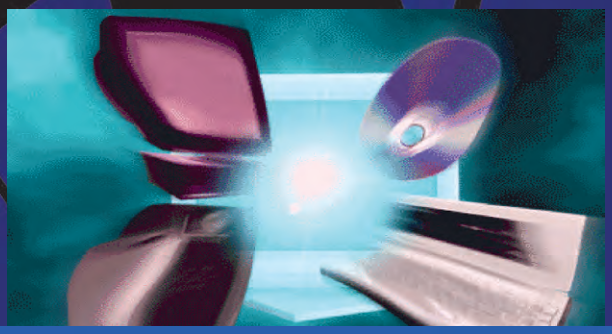

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The IEICE-CS GLOBAL NEWSLETTER (GNL) has been established since 2002. We quarterly publish an English newsletter every March, June, September and December. The printed version of these magazines has been delivered including a lot of useful information and interesting contents to IEICE CS members. We are now considering changing GNL in printed version to online version. As the first step of this change, we consider that the printed version is delivered only for the overseas member from next year, and publishing GNL in the website at:

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The detail is still under consideration and will be informed soon.

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