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Introduction to IEICE Technical Report Online Service and Its Utilization

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1. Introduction

The IEICE technical committee submission system[1] has been developed and maintained by the IEICE headquarter and the author from 2003 [1-3]. In 2010, the IEICE technical report online system[2] was additionally developed to start the online service of the proceedings [4,5]. This article introduces the overview of the systems and its utilization.

2. Overview of the systems

The 82 technical committees manage more than 300 technical workshops. The system can collect accurate electric bibliographic information of the IEICE technical report (the proceedings of the workshops) and provide them in both Japanese and English [2,3], not only for the IEICE members but also related researchers. Table 1 shows the numbers of workshops and submissions in all technical committees. Table 2 shows the number of submissions by the IEICE society/group. In recent 10 years, more than 64,900 submissions were processed using the system and their accurate bibliographic data are provided in the advance programs, with helpful search functions, via the Internet.

From 2010, the IEICE technical report online service has been provided to the subscribers of print version of the IEICE technical report in book form. Currently, the electric version of the technical report in PDF format, for engineering science society including NOLTA society (IEICE-A, in Table 2), communications society (IEICE-B), information and systems society (IEICE-D) are available in the IEICE technical report online system. The technical report for electronics society (IEICE-C) is available in the other system, named technical report archives, at https://www.ieice.org/ieice-es/docs, only for the society members. The 4 technical committees of human communication group (IEICE-H) are now under discussions for the online service.

3. Technical report online service

The targeted users of the technical report online service are: the subscribers of the printed technical report, the authors, the secretaries of the technical committees and people who have coupons, like attendees of overseas workshops where coupon codes will be delivered by the secretaries. The coupon is for the special case, so detailed information should be confirmed to the secretaries of such overseas workshops.

The subscribers can download electric PDF files of the subscribing technical reports at any time of the year. The authors can download only the files in the technical report in which the author's paper is published, for 2 weeks, from the issue date of the technical report which is normally one week before the workshop day. For the coupon holders, the valid period depends on their coupon; refer to the description of the coupon.

If you are the first time to use the online system, you must make user registration at first. As shown in Fig. 1, click the 'Sign-In' link of the IEICE technical committee submission system, or directly access to the URL[2]. Then, the sign-in form is displayed. If you already have your account, sign in. Otherwise proceed to the registration of user's account. Here, an e-mail address is registered as username. If you are the author, note that this e-mail address for the username must be the same one written in the submission form, where up to 5 e-mail addresses can be written. The system will estimate whether the account is the author or not, by using the address matching. Sign in with your new account.

Table 1　Workshops and submissions of the IEICE technical committees by year.

Year	Workshops	Submissions
2004	214	2,983
2005	289	4,831
2006	321	5,369
2007	347	5,932
2008	361	6,301
2009	367	6,387
2010	365	6,486
2011	383	6,623
2012	378	6,690
2013	387	7,029
2014	388 *	6,271 *
Total	3,800	64,902

* The latest data on Jan. 18, 2015.

Table 2　Submissions by society/group.

Society/Group	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Total
IEICE-A	527	901	869	1,118	1,179	1,156	1,172	1,100	1,189	1,278	1,065 *	11,554
IEICE-B	1,315	1,831	1,927	2,037	2,213	2,242	2,238	2,277	2,304	2,408	2,418 *	23,210
IEICE-C	184	622	850	951	1,037	1,076	1,093	1,085	1,142	1,212	1,034 *	10,286
IEICE-D	914	1,394	1,592	1,662	1,635	1,676	1,667	1,836	1,731	1,769	1,392 *	17,268
IEICE-H	43	83	131	164	237	237	316	325	324	362	362 *	2,584
Total	2,983	4,831	5,369	5,932	6,301	6,387	6,486	6,623	6,690	7,029	6,271 *	64,902

* The latest data on Jan. 18, 2015.

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[1] http://www.ieice.org/ken/?lang=eng
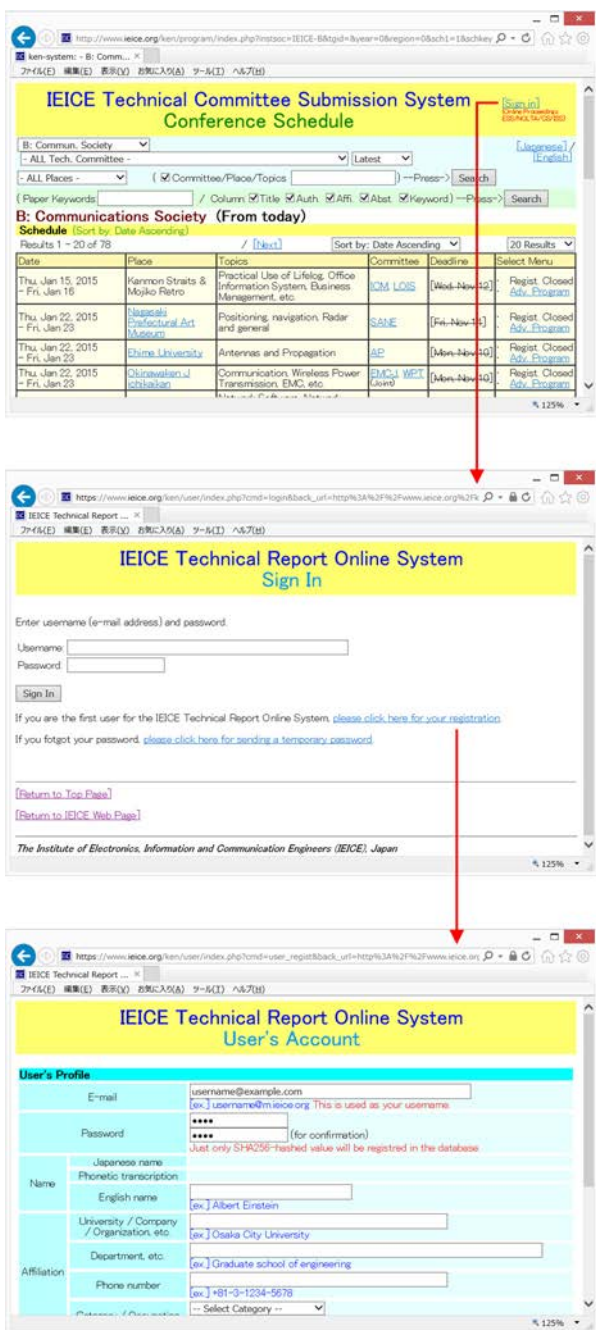[2] https://www.ieice.org/ken/user/?lang=eng

Fig. 1   User registration.

After the sign in, your name will appear at the top-right corner of the page, as shown in Fig. 2. If you have a coupon, click the 'my account' link, so you will find user's account menu page. Click 'register your coupon' link to register your coupon code. If you are the author and want to download your paper on the workshop day, the coupon code is not necessary.

Go to the advance program page of the workshop. During sign in, you will see a PDF icon near each paper's title. Choose and click the PDF icon to download it. If the PDF icons cannot be seen, it means that there is no permission to download, or not in the valid period, or not in your technical report, or not published yet.

Table 3 shows the numbers of users and downloads in each month of 2014. The 12,000 users, including
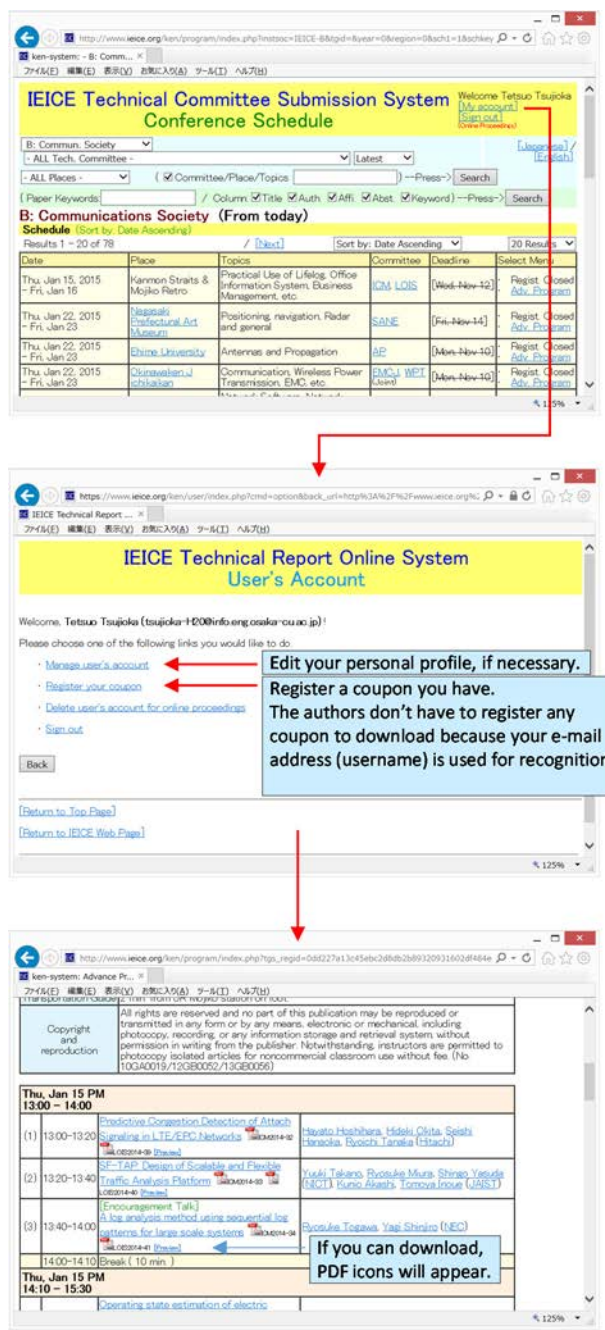
Fig. 2   User's account menu and advance program page.

Table 3   Users and downloads by month.

Month	Users	(New)	Downloads
Jan-14	10,656	(192)	5,928
Feb-14	10,798	(142)	9,935
Mar-14	10,955	(157)	11,517
Apr-14	11,073	(118)	3,704
May-14	11,216	(143)	10,564
Jun-14	11,362	(146)	6,290
Jul-14	11,494	(132)	6,164
Aug-14	11,602	(108)	3,567
Sep-14	11,754	(152)	4,749
Oct-14	11,912	(158)	6,092
Nov-14	12,049	(137)	6,200
Dec-14	12,184	(135)	6,610
Total downloads			81,320

Fig. 3 Overview of access.

Table 4 Frequency distribution.

Count of Sessions	Sessions		Pageviews	
TOTAL	916,870	(100.00%)	2,939,711	(100.00%)
1	454,794		1,124,983	
2	101,226		326,103	
3	53,578		190,126	
4	36,325	(79.50%)	132,801	(71.09%)
5	27,450		102,525	
6	21,958		84,074	
7	18,180		68,839	
8	15,414		60,365	
9-14	59,948	(6.54%)	244,881	(8.33%)
15-25	49,812	(5.43%)	207,200	(7.05%)
25-50	39,804	(4.34%)	174,816	(5.95%)
51-100	22,608	(2.47%)	111,790	(3.80%)
101-200	10,325	(1.13%)	57,901	(1.97%)
201 or more	5,448	(0.59%)	53,307	(1.81%)

Table 5 Country distribution.

Country / Region	Acquisition			
	Sessions		New Users	
TOTAL	916,870	(100.00%)	454,794	(100.00%)
Japan	882,954	(96.30%)	429,939	(94.53%)
United States	7,754	(0.85%)	5,785	(1.27%)
China	2,803	(0.31%)	2,149	(0.47%)
South Korea	2,794	(0.30%)	1,936	(0.43%)
India	2,160	(0.24%)	1,812	(0.40%)
Thailand	1,721	(0.19%)	887	(0.20%)
Taiwan	1,552	(0.17%)	1,177	(0.26%)
Germany	1,314	(0.14%)	951	(0.21%)
Singapore	1,247	(0.14%)	672	(0.15%)
United Kingdom	1,003	(0.11%)	778	(0.17%)
France	935	(0.10%)	708	(0.16%)
Vietnam	806	(0.09%)	525	(0.12%)
Indonesia	679	(0.07%)	483	(0.11%)
Malaysia	676	(0.07%)	436	(0.10%)
Canada	607	(0.07%)	474	(0.10%)
Australia	450	(0.05%)	297	(0.07%)
Italy	435	(0.05%)	322	(0.07%)
Spain	393	(0.04%)	271	(0.06%)
Hong Kong	381	(0.04%)	306	(0.07%)
Netherlands	355	(0.04%)	234	(0.05%)
Iran	328	(0.04%)	292	(0.06%)
Russia	295	(0.03%)	251	(0.06%)
Switzerland	286	(0.03%)	179	(0.04%)
Brazil	285	(0.03%)	238	(0.05%)
Philippines	281	(0.03%)	245	(0.05%)
Sweden	246	(0.03%)	163	(0.04%)
Egypt	245	(0.03%)	191	(0.04%)
Finland	201	(0.02%)	123	(0.03%)
Turkey	187	(0.02%)	155	(0.03%)
Poland	178	(0.02%)	123	(0.03%)
Greece	169	(0.02%)	122	(0.03%)
Belgium	164	(0.02%)	134	(0.03%)
Mexico	138	(0.02%)	128	(0.03%)
Denmark	123	(0.01%)	62	(0.01%)
Pakistan	117	(0.01%)	108	(0.02%)
Potugal	105	(0.01%)	83	(0.02%)
Austria	104	(0.01%)	72	(0.02%)

1720 new users of 2014, are active and there were approx. 80,000 downloads in 2014.

4. Utilization

Fig. 3 shows the overview of the access to both the IEICE technical committee submission system and the technical report online system, from Jan. 1 through Dec. 31 of 2014. There were 916,870 sessions. The average number of sessions per week is about 17,500. For weekdays, 3,000-4,000 sessions are available on each day.

Table 4 reports the frequency distribution of the sessions and page-views, for the same period in Fig. 3. A large number of repeaters can be seen. It can be estimated that the total number of users may exceed 120,000. The number of heavy users during 2014, with the count of sessions of more than 100, is 15,773.

Table 5 shows the country distribution of the clients. 96.30% of the access is domestic and the remaining 3.70% of access is from outside of Japan, but it isn't negligible, thus 33,916 sessions. The top 15 countries/regions are United States, China, South Korea, India, Thailand, Taiwan, Germany, Singapore, United Kingdom, France, Vietnam, Indonesia, Malaysia, Canada and Australia.

Finally, the language distribution of the browser is shown in Table 6. Interestingly, the ratio of Japanese language with 'jp', 'ja-jp' and 'ja-jp-mac' is decreased to 93.8%. The second one is English language with the ratio of 4.52%. So, the session of 1/25 to 1/20 is generated by English browsers, which might be operated by foreigners.

5. Conclusion

The overview and utilization of the IEICE technical committee submission system and the technical report online system have been introduced. The author would hope that the service will be helpful also for the IEICE overseas members.

6. Acknowledgement

The author would like to thank to all the secretaries of the IEICE technical committees and the members of council of technical committee representatives of the

Table 6   Language distribution.

Language	Acquisition			
	Sessions		New Users	
TOTAL	916,870	(100.00%)	248,047	(100.00%)
jp	561,460	(61.24%)	171,581	(69.17%)
ja-jp	298,476	(32.55%)	20,012	(8.07%)
en-us	35,438	(3.87%)	4,095	(1.65%)
en-us	4,867	(0.53%)	3,107	(1.25%)
zh-cn	1,535	(0.17%)	1,015	(0.41%)
ko	1,507	(0.16%)	1,060	(0.43%)
en-gb	1,146	(0.12%)	971	(0.39%)
zh-tw	932	(0.10%)	672	(0.27%)
ko-kr	672	(0.07%)	573	(0.23%)
fr	490	(0.05%)	133	(0.05%)
th	449	(0.05%)	199	(0.08%)
de	365	(0.04%)	281	(0.11%)
es	293	(0.03%)	228	(0.09%)
vi	283	(0.03%)	186	(0.07%)
pt-br	257	(0.03%)	201	(0.08%)
ru	231	(0.03%)	199	(0.08%)
de-de	204	(0.02%)	188	(0.08%)
es-es	190	(0.02%)	164	(0.07%)
c	185	(0.02%)	185	(0.07%)
it	124	(0.01%)	111	(0.04%)
fr-fr	122	(0.01%)	106	(0.04%)
th-th	118	(0.01%)	77	(0.03%)
pl	114	(0.01%)	99	(0.04%)
ru-ru	112	(0.01%)	103	(0.04%)
ja-jp-mac	99	(0.01%)	46	(0.02%)
it-it	96	(0.01%)	9	(0.00%)
id	81	(0.01%)	73	(0.03%)
tr	77	(0.01%)	74	(0.03%)
nl	67	(0.01%)	61	(0.02%)
vi-vn	67	(0.01%)	51	(0.02%)
sv-se	58	(0.01%)	43	(0.02%)
ar	48	(0.01%)	46	(0.02%)
tr-tr	42	(0.00%)	36	(0.01%)
pt-pt	40	(0.00%)	36	(0.01%)
en-ca	38	(0.00%)	32	(0.01%)
zh-sg	33	(0.00%)	1	(0.00%)
es-419	31	(0.00%)	29	(0.01%)

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Plate-laminated Waveguide Slot Array Antennas

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1. Introduction

I have been engaged in studying on waveguide slot array antennas for about 25 years. Recently, we have been developing the plate-laminated corporate-feed waveguide slot array antennas shown in Fig.1 since 2008 as a high-antenna-efficiency, high-gain, wide-band planar antenna in the millimeter-wave and the sub-millimeter bands. This paper presents the functionality extensions of this antenna.

2. Basic antenna structure

Fig.1 shows the basic antenna structure [1], which radiates linear polarization. The antenna has a double layer. The bottom layer has a corporate-feed waveguide and the top layer has radiating slots. A coupling aperture at each end of the corporate-feed waveguide excites 2x2 radiating slots. All the radiating slots are excited in equal amplitude and phase at any frequencies.

The antennas are fabricated by diffusion bonding of laminated cupper thin plates with various etching patterns [2]. Etching gives high precision of about 20μm and the diffusion bonding gives perfect electrical contact among the plates.

The 60GHz-band linearly-polarized 16x16-slot array antenna achieved about 80% antenna efficiency including all the losses over 4.8GHz bandwidth in measurement [1].
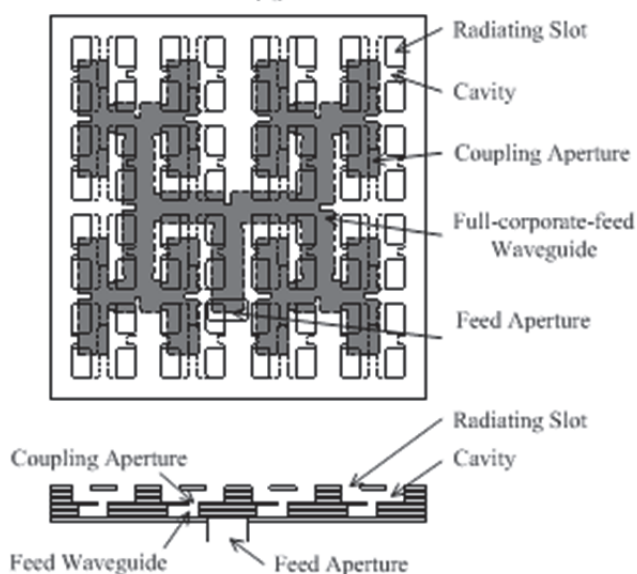
3. Functionality extensions

(1) Bandwidth

The corporate-feed waveguide is a cascade of T-junctions. That for the 60GHz-band linearly-polarized 16x16-slot array antenna had the reflection less than -20dB over 11.8% bandwidth in simulation [1]. The radiating element consisting of the 2x2 slots was analyzed by the method of moments (MoM) with numerical eigenmode expansion [3] and 14 parameters were designed. The 60GHz-band linearly-polarized 16x16-slot array antenna improved the gain more than 31.5dBi over 19.2% bandwidth in measurement [4].

(2) Polarization

45-degree tilted linearly-polarized planar square antennas are typically used in fixed wireless access systems because their 45-degree rotating installation realizes equivalent triangular-taper excitation distribution to meet the sidelobe pattern mask. In the plate-laminated waveguide antennas, a layer consisting of 45-degree tilted wide slots is placed over the basic structure [5]. The above-mentioned MoM and the genetic algorithm (GA) for the 16x16-slot array antenna with 45-degree tilted linear polarization shown in Fig.2 achieved gain more than 31.4dBi and cross polarization less than -30dB over 71-86GHz as shown in Fig.3 in measurement [6]. The dimension of each plate is 60mm x 61mm x 0.2mm and the total thickness is 3.2 mm. The cross polarization is suppressed by adding one more layer consisting of narrow-slot pairs over the top of the antenna.

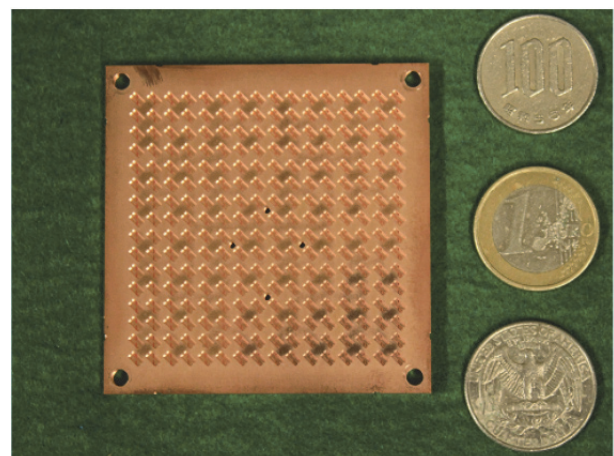Fig. 1　Basic antenna structure

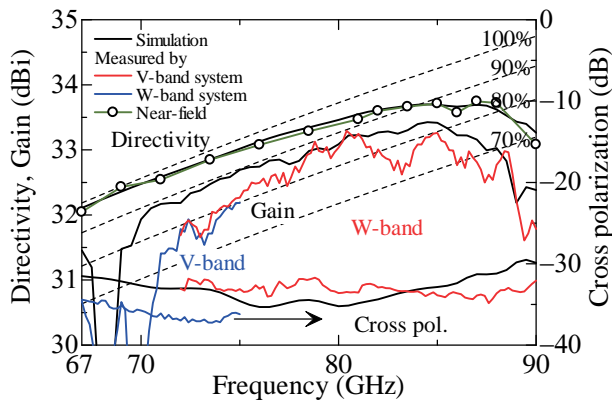Fig. 2　80GHz-band 45-degree linearly-polarized 16x16-slot array

Fig. 3   Directivity, gain and cross polarization in the 80GHz-band 45-degree linearly-polarized 16x16-slot array

To obtain circular polarization, the plate-laminated waveguide antenna has a layer of rectangular aperture where two corners are trimmed off to degenerate two modes on the top [7]. The above-mentioned MoM and GA for the 60GHz-band 16x16-slot array antenna with circular polarization realized wide bandwidth of 17.2% for the antenna efficiency more than 80% and 16.6% for the axial ratio less than 3dB in simulation [8].

The dual polarization operation is realized by placing two feed waveguides in a double layer on the bottom of the antenna. High isolation is achieved by placing longitudinal coupling apertures for one polarization without an offset in the feed waveguide for the other polarization. A 60GHz-band dual-polarization 16x16-slot array antenna had isolation more than 50dB with the antenna efficiency more than 70% over 60-64GHz in measurement [9].

(3) Gain

The corporate-feed waveguide can easily be extended to increase the size when the number of the elements is 2^n. When the size increases, the single-layer feed waveguide has too long and thin metal lines in part. These metal lines are easily bent by mechanical
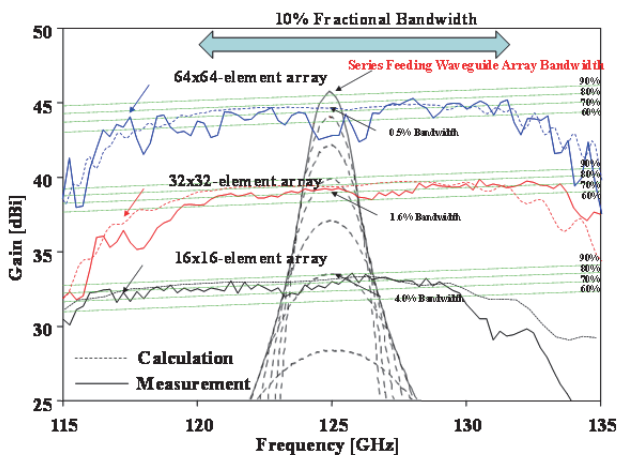
pressure in the diffusion bonding. The single-layer feed waveguide is divided into a double layer, where the bottom layer has a global corporate-feed waveguide and the top layer has local corporate-feed waveguides, for the 32x32- and 64x64-slot array antennas. Fig.4 shows the gain of 120GHz-band corporate-feed antennas. About 10% bandwidth was kept when the number of the elements as well as the gain increased in measurement [10]. This is an advantage of the corporate-feed antenna in comparison with the series-fed antenna. In the series-fed antenna, the bandwidth becomes narrow when the number of the elements as well as the peak gain increased.

As an example of the number of the elements other than 2^n, the corporate-feed waveguide for a 12x16-slot array antenna was proposed by introducing asymmetrical T-junctions and crossing junctions. The 60GHz-band antenna realized different 3dB-beamwidths: 5.0 degrees in the E-plane and 3.7 degrees in the H-plane in measurement [11].

4. Conclusion

The basic structure and the functionality extensions in the plate-laminated waveguide slot antennas have been discussed. We are now trying to have diffusion bonding of aluminum plates to reduce the weight to apply for fixed wireless access systems. The weight of aluminum antennas is about 1/3 of that of cupper antennas for the same volume. We are also trying to fabricate the 350GHz-band antenna by silicon process to achieve the tolerance of μm order [12].

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Fig. 4   Gain of 120GHz-band corporate-feed antennas

Future Development of Global Education and Research in Information Communication Technology

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European countries and the USA have actively promoted domestic study exchange activity with Asian, Middle Eastern and African countries as leadership of colony countries. Exchange students in such programs receive an education in a developed country and contribute to the development of the country's industry or become political leaders in their home countries. They also build cooperation between the two countries and play major roles in solving the problems of nations that have emerged from colonial rule.

In Japan in the 7th century, a Japanese envoy to China during the Tang Dynasty was dispatched for the purpose of acquiring state-of-the-art academic knowledge. More recently, Japanese government also actively promoted domestic study exchange activity to acquire current knowledge in order to help modernize the country. Recently, Japanese companies have dispatched students from companies to collaborate with universities overseas. There are many Japanese domestic study exchange students working as teachers in universities in Japan after studying in universities overseas.

Recently, China and Vietnam promoted domestic study exchange activities for the purpose of developing domestic industries and constructing modern social systems in a short period of time. In China, this was done through the State Scholarship Study Abroad Program for Graduate Studies at the China National University of Construction by the Chinese Scholarship Council (CSC) and in Vietnam through the Doctoral Education Support Project for Vietnamese Students. Domestic study exchange activity is effective as a way to facilitate rapid industrialization in developing countries without constructing their own education systems by bridging exchange of industrial policies, education, national security, religion and culture.

On the other hand, looking ahead to the future in Japan, the labor force will decrease and stable economy growth will be difficult to attain due to the decrease in the number of children. We must consider integrating domestic study exchange activity into the social system in Japan to encourage give-and-take relations between study abroad destination countries and the countries of origin of exchange students.

In 1990, a number of national and private graduate schools were established, including the Japan Advanced Institute of Science and Technology (JAIST) and the Nara Institute of Science and Technology. The Global Information Telecommunication Institute (GITI) and the Graduate School of Global Information and Communication Studies (GITS) were established in 1998 and 2000, respectively, at Waseda University with the aim of providing global research and education based on the information superhighways in Asia [1]. Around 1500 master's course students and around 150 PhD students had graduated from GITS by Sept. 2014. Of these students, 70% were students from abroad studying in Japan via domestic study exchange activity. In recent years, approximately 50% of domestic study exchange students have come from the People's Republic of China. In this environment, we need to consider the state of domestic study exchange activity in Japan on the basis of our recent experience.

Fig. 1   Seminar scene in my house

GITS is an interdisciplinary graduate school with three areas of study: computer science and network engineering, multimedia science art and the information socio economics and network business and economics and policy. The curriculum is offered for the purpose of global education and interdisciplinary. The GITS activity has been promoted in cooperation with industries, foreign institutes, and international standard organizations. As a result of the activities, a wide variety of talented students enroll in GITS from foreign countries, especially Asian countries.

When GITS was first founded, many foreign students including Chinese students enrolled in GITS with the support of Monbukagakusho (MEXT) Scholarships and the Japan International Cooperation Center (JICE).

Recently, Chinese students have been using private financing to enroll in GITS as the country has become wealthier. Since 2010, domestic study exchange students from developing countries in Asia have enrolled with the support of scholarships from MEXT and JICE. Since GITS is a graduate school, there are a few students from schools in Japan. Therefore, 70% of master course students and 90% of the PhD candidates have been foreign students.

In this environment, lectures are mainly given in English. One condition for admission is the ability to speak Japanese or English. Students from foreign countries take an internet-based examination to determine their knowledge and language proficiency.

The popularity of GITS has been gradually increasing, and many interested foreign students have contacted the school through the internet. New students also have enrolled at GITS through the experience stories of the graduate students. Their motivation to study is very high because they are domestic study exchange students.

It is important that domestic study exchange students feel welcome and well taken care of. Events are held, and they are taken to visit primary schools, junior high schools, and high schools in the local area. At the entrance ceremony, a local traditional dancing group performs. The needs of Muslim students should be taken into account with respect to the food available at outside seminars and welcome parties and during Ramadan. It is also important to provide health care. JICE also provides support for JICE students. It is especially important to be sensitive to the needs of students from countries at war. When accidents occur, it is important to ensure that the potential for Post-Traumatic Stress Disorder is taken into consideration (PTSD).

So many foreign students attend GITS that they develop good relationships with other students from their home countries. If they want to get jobs after graduation, attending the Center of Language (CJL) at Waseda University is recommended so the students can obtain first class passage of the Japanese Language Proficiency Test (JLPT), and it is also recommended that they make efforts to communicate about daily life in Japanese with the faculty. PhD candidates in particular should study Japanese and undertake their research simultaneously. Japanese is easier to learn for students from countries that use Chinese characters, but is difficult for students from south-east Asia or the Middle East. In my experience, there have been many students at GITS who can speak three or four languages, including Japanese, and have been able to get jobs in Japan.

Domestic students have at times fallen ill, become homesick, needed to apply for visas or get a guarantor for an apartment, needed help with tuition and living expenses, had credit card issues, had to undergo police questioning about missing bicycles, had trouble with lectures, and had housing problems or love problems. When such troubles occur, our role is to provide information to students to help them solve the issues.

Fig. 2   Volunteer of international conference

Students who have the ability to speak Japanese sit for the Synthetic Personality Inventory (SPI) and receive "nai-nai-tei" from a company where they are applying for employment through a free application or recommended application. They sometimes cannot get jobs even if they are excellent. We have to take care of the students by consulting or arranging with hiring companies. When a student gets a job and expresses his or her happiness to me, I feel as happy if I had gotten the job myself. This happens every year. While they do not expect these jobs to be long-lasting, some students have continued to work at the same company for years and been sent on business trips abroad within three years if they have strong English abilities.

Fig. 3   Summer seminar at Karuizawa house

They keep us informed via Facebook, visit us at the university to talk about their current situations, visit my house with their families, and send Nengajho (New Year's cards) written in Japanese. Some of your students have co-authored papers with you or other faculty members. Some students have established companies.

GITS first started as a private university in 2000. GITS has "has been a center of Information Communication Technology (ICT) education on a global scale and especially in Asia. In order to continue providing education as a private university, GITS must cooperate with department of school and provide education for undergraduate students.

In addition, some universities in the USA have begun making inroads into the education markets of Asia. At Waseda University, GITS has cooperated with the faculty of science engineering to found an undergraduate unit named the Department of Communications and Computer Engineering and a graduate unit named the Department of Computer Science and Communication Engineering, which should strengthen the school's finances and the internationalization of education beginning in 2014.

Fig. 4   GITS graduation ceremony
at Waseda University

In Japan, the birth rate, population and labor force are decreasing rapidly. Adding female or older workers will not be sufficient to maintain Japan's industrial power. An influx of many highly intelligent foreigners is required to enable our industries to flourish. In the past, Japanese domestic study exchange programs sent Japanese students abroad to obtain advanced knowledge from highly developed countries or invited foreign students to take part in advanced studies in Japan. However, domestic study exchange activity is now necessary to obtain an educated labor pool to support industries in Japan. This is not a problem only in Japan as the same situation will arise in China and Korea in the near future.

The admission of enough foreign students from developing countries will be difficult without sufficient scholarship support. Domestic study exchange students are employed by companies in Japan after graduation, and Japanese companies benefit from them. In addition, these students pay taxes when they are working as employees of Japanese companies. Japanese companies as well as the Japanese government should provide scholarship support for domestic study exchange students. Universities should design domestic study exchange programs in cooperation with private companies for the purpose of global education. This is a necessary but not a sufficient condition. The domestic study exchange program also benefits the students and their countries of origin as well as the destination countries. Even though domestic study exchange students may work for Japanese companies, they will eventually, in all likelihood, go back to their home countries. Their experience in Japanese companies will be useful for developing industries in their countries of origin. Their children may also enroll in Japanese universities as domestic study exchange students and may also collaborate with companies in Japan. The education program requires a long-term commitment. I feel that Japan should provide the generous support needed to enter this new era and invite many excellent students from abroad to attend universities in Japan.

1. References

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KDDI R&D Labs: Challenge for Innovation

Anup Kumar Paul and Teruyuki Hasegawa
KDDI R&D Laboratories, Inc.

1. Introduction

Our Laboratories [1] are at the heart of the KDDI Group [2] research and development efforts. At these laboratories, we work to connect a multitude of people, things and data using top-end communication methods to realize ideal communications environments.

The environment surrounding information technology has been changing drastically over the past few years. In the mobile world, the use of smartphones is increasing dramatically with the emergence of devices such as tablet PCs and mobile routers, and users are now able to access broadband anytime, anywhere with any device.

In order to respond to such drastic changes, as our key strategies, the company has come up with the 3M strategies to realize Multi-networks, Multi-devices and Multi-usages (3M), as well as globalization to expand our business deployment around the world. Our laboratory is promoting research and development to create low-cost, highly added value, reliable and high-quality networks and services for the 3M strategies. We will foresee trends addressing the leading-edge technology development that is required for dreams-come-true services to the next generation. Furthermore we will contribute to our global strategy by actively addressing open innovation overseas, such as in Silicon Valley in the United States. In today's rapidly advancing information technologies, we are going ahead with "Challenge for Innovation" so that we will be able to provide safe, secure and comfortable leading-edge values and experiences.

2. History and Overview

Our Laboratory, which was named before as KDD Research Lab and was established in 1953 as a research department of Kokusai Denshin Denwa (KDD) Co., Ltd. A new facility was constructed in 1960 in Meguro, Tokyo. In 1987, it was moved to another new facility in Fujimino, Saitama prefecture as shown in Fig.1. In 1998, KDD R&D Laboratories, Inc. was established and later in 2001, KDD R&D Laboratories Inc. and Kyocera DDI Institute of Future Telecommunications, Inc. were merged to form KDDI R&D Laboratories, Inc.

About 300 people (as of April 2014) are working in our laboratories, among them 6% are foreigners from different countries around the world. The research activities are mainly conducted in the head office as shown in Fig.1 as well as YRP research center located in Kanagawa prefecture of JAPAN (Fig.2). The Silicon

Fig. 1   Our Laboratories Head Office

Fig. 2   YRP Research Center

Fig. 3   San-Francisco Office

Fig. 4   GAT Building (Company Headquarter)

Valley office in San- Francisco, USA's (Fig.3) mission is to seek seeds technologies which create new business, delivers them to related divisions in the company and finally commercializes them through technology development and verification. The key tasks are trend survey at exhibition and workshop, individual meeting with technical companies and information gathering through local community. The development activities are conducted in the Headquarter of the company

Fig. 5   Main Research Area

(Garden Air Tower) as shown in Fig.4, which is located in Tokyo.

3. Our Activities

A variety of research and development activities are conducted in our laboratory in different departments. Our main mission is to conduct research activities toward new value creation and comfortable user experiences. We contribute realization of convenient and rich society supported by ICT throughout fundamental research on cutting-edge technologies as can be seen from Fig.5 and their prompt development and deployment.

3.1 A Brief Overview of Our Activities

Access Network:

This division is conducting research and development work on higher frequency wireless transmission, interference suppression in between base stations (BSs), small and lower cost BSs, adaptive array antenna and LTE & Wi-Fi multi-utilization circuit, to realize high quality radio circuit for customers. The main activities are as follows but are not limited to

1. Optimization of deployment in LTE small-cell.
2. Data compression for centralized radio access network (C-RAN).
3. Message transmission system using unmanned aircraft vehicle (UAV).

Core Network:

This division covers various technologies for backbone networks such as high-speed photonic transport, network control and management for high quality services, including future Internet technologies. The main activities are as follows but are not limited to

1. High-capacity optical transmission technologies.
2. Network control and management.
3. Network infrastructure for big data.
4. Future Internet.

Network Operation and Administration:

Research and development for network management over multi-network, including integrated operation & management, quality management, communication analysis & prediction, traffic offload, efficient utilization of network resource and auto-configuration, etc., are conducted to provide a variety of high quality communication services. The main activities are as follows but are not limited to

1. Smartphone-based Network Control Scheme.
2. Quality monitoring systems for multi-networks.
3. Detailed traffic analysis for 3.9G LTE mobile communication.
4. Diagnosis of smartphone battery.
5. Auto-configuration of network equipment.

Green · Cloud:

Research and development are conducted for deploying a big data analytics platform with data federation technology architected for carrier grade scalability, M2M service platform in multi-vendor and multi-device environments, as well as green ICT technologies such as smart grid, to realize ambient and eco-friendly society. The main activities are as follows but are not limited to

1. Big data aggregation platform.
2. Big data analysis.
3. Green hub system.
4. Acoustic observation for endangered species.

Security:

Security technologies that realize cloud computing and/or social network services are covered. Such as fundamental research on cryptography, secret sharing, and practical technologies for smart phone security, privacy protection, cyber security and UIM technology. The main activities are as follows but are not limited to

1. Next generation public key cryptography.
2. Privacy enhancing technologies.
3. Digital watermarking technology.

Multimedia:

Research and development are conducted to realize multi-use of various contents on multi-device and multi-network environment, with multimedia technologies including music and video analysis, space synthesis by real and virtual fusion, and the convergence of telecommunications and broadcasting. The main activities are as follows but are not limited to

1. 8K ultra-high definition video codec.
2. HTML5 based in-vehicle infotainment.
3. Large scale image retrieval system.

Human Communication:

Human Communication division conducts R&D on human computer interaction, intelligent data mining, analysis and application of social media to create novel global communication services which add new values for our life. The main activities are as follows but are not limited to

1. Personalized dialog system.
2. Social media visualizer with smart-phone.
3. Smartphone learning assistive application.

R&D Promotion:

To facilitate immediate realization of the latest research outcome, this division develops network and/or application technologies useful for business in various areas such as multimedia, augmented reality,

health and medical ICT. The main activities are as follows but are not limited to

1. Mobile video transmission system.
2. Technical information sharing system.
3. First and robust image tracking engine.
4. High speed mobile viewer system for emergency medical service.

4. IP Communication Quality Groups Recent Activity

Our group is in Network Operation and Administration Division. Our main research activities are related to the transport layer of TCP/IP protocol suite. Our recent research activity is Available Bandwidth (AB) Estimation for End-to-End Network path, one of the main activity on quality monitoring system for multi-network in Network Operation and Administration Division as mentioned in Sec.3. AB is a very important metric for QoS management, traffic engineering, and congestion control, just to name a few. Obtaining useful information is often not possible due to various technical and privacy issues or due to an insufficient number of measurement accuracy. Thus it becomes necessary to infer the required information from the network edge via an active or passive probing scheme.

Nowadays wireless communication with mobile devices such as smartphones are widespread and play an essential role in business and personal communication services in our society. However it is difficult to comprehensively grasp end-to-end bandwidth performance in a fine grained manner in large-scale networks, due e.g., to, the rapid increase in mobile Internet users, dynamic nature of wireless access networks and diversifying the communication service applications.

In order to cope with various challenging issues of measuring AB, we have come up with a solution which we call NEXT [3]. A possible scenario for AB estimation is shown in Fig. 6. For estimating the AB, our approach is active probing, i.e., we send some probe packets into the network and measure the AB. More specifically, NEXT sender continuously sends back to back probing streams of length N packets, where each packet is sent at a potentially different probing rate by controlling the inter-packet gaps. The NEXT receiver records the arrival time of each packet and then from the sending time stamp of that packet it calculates the relative queuing delay that each packet faces on the way from sender to receiver via different routers. If the packet's rate is less than the AB of the path, then no queuing delay occurs. But if the packet's rate is greater than the AB, then queuing delay occurs. A typical nature of queuing delay faced by different packets with different rates is shown in Fig. 7. The receiver computes the AB by detecting the turning point where the queuing delay for all successive packets starts to increase continuously. NEXT uses a unique probing train structure in which there is a region where packets are sampled more frequently than the other region. The high density region enables to
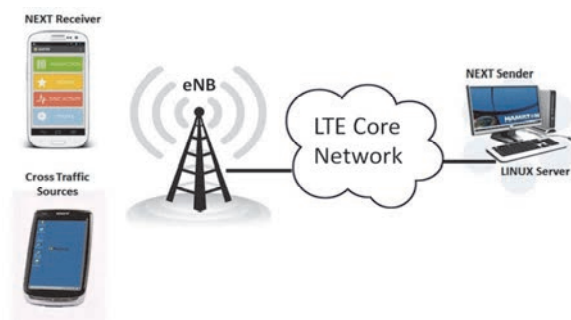

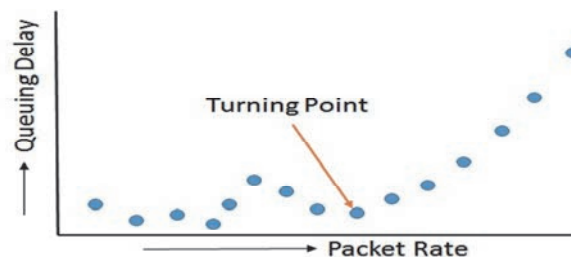
Fig. 6   Scenario for measuring AB

Fig. 7   Queuing Delay Nature

determine the increasing trends of the one-way packet delays more accurately, if the estimated value is within the high density region. When the estimated value is outside of the region, we regard the probing rates were insufficient and adjust the probing rates so that the next estimated value fits into the high density region in the following measurement-round. NEXT dynamically adjusts the range of the probing rates every measurement- round. This feature also reduces the total number of packets and thus total bytes injected to the network. For readers who are more interested in the technical features of NEXT can refer to [3].

5. Summary

Connecting people around the world "heart to heart" that is what the KDDI group does. Telecommunication is not just a means to connect from one point to another; it also connects one heart to another. In our lab, our dream of making our technologies used by the world is the key source of our enthusiastic passion and love towards our research and development work. The key is to create innovative products and services for the people and making their lives more exciting and fun filled. The persistence in building this dream by innovative research and development activities, what we call "Challenge for Innovation" will shape our Laboratory into a center of excellence.

6. References

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[2] global.kddi.com.
[3] Anup Kumar Paul, Atsuo Tachibana and Teruyuki Hasegawa, "NEXT: New Enhanced Available Bandwidth Measurement Technique, Algorithm and Evaluation," in IEEE PIMRC, Washington DC, USA, 2014, pp. 443-447.

Report on the 28th Optical Communication Systems Symposium
"Optical communication technologies fulfilling expectations from international community toward new innovations"

Technical Committee on Optical Communication Systems

1. Introduction

The 28th Optical Communication Systems (OCS) Symposium was held at the Toray Human Resources Development Center in Mishima City, Shizuoka, Japan, on Dec. 11–12, 2014. This year's symposium featured "Optical communication technologies fulfilling expectations from international community toward new innovations," highlighting a plenary talk by Prof. Vincent W. S. Chan of MIT and invited talks by three foreign researchers at a special workshop organized for global activities. There were 216 participants and 27 exhibitors, both of which hit the largest number. The symposium was sponsored by the IEICE Technical Committee on OCS, and in cooperation with the IEEE Photonics Society Japan Chapter, the IEEE Communications Society Japan Chapter, the Photonic Internet Forum (PIF), and the IEICE Technical Committees on Photonic Network (PN) and Extremely Advanced Optical Transmission Technologies (EXAT).

2. Technical sessions

After the opening address by Dr. Masahito Tomizawa, the IEICE OCS committee chair, summarizing this year's activities and future plans of the OCS technical committee, the technical sessions started from a special lecture by Dr. Yutaka Miyamoto (NTT Network Innovation Laboratories) entitled "Latest trends in scalable large-capacity optical transport technologies" (Fig. 1). He reviewed rapid progress in scalable optical transport technologies over the past 25 years since he started his career in NTT, with a special focus on paradigm shifts introduced in optical communication. He described how R&D has transformed "impossible" to "real," such as the deployment of EDFA, Raman amplification, and coherent transmission. He also presented recent intensive activities on space division multiplexing (SDM) in Japan toward Pbit/s capacity and larger, which he also expects to bring about another paradigm shift.

Fig. 1   Special lecture by Dr. Y. Miyamoto.

Fig. 2   Presenters of Workshop 1: from left, Dr. T. Tatsumi, Dr. T. Takahara, and Dr. T. Mizuochi.

The second technical session was a workshop featuring 400G/1T optical communication technologies fast approaching commercialization, which included the following three invited talks (Fig. 2): recent progress in 400G/1T devices and modules by Dr. Taizo Tatsumi (Sumitomo Electric), modulation technologies for 400 GE by Dr. Tomoo Takahara (Fujitsu Laboratories), and advanced forward error correction and coding technologies by Dr. Takashi Mizuochi (Mitsubishi Electric). The workshop convinced the prospect for commercial deployment of such ultrafast systems.

After the poster session contributed by 26 young researchers, Prof. Masahiko Jinno (Kagawa University) gave an invited lecture (organized by IEEE Photonics Society Japan Chapter) entitled "Evolution toward elastic optical networks and beyond" (Fig. 3). He reviewed how the concept of elastic optical network is

Fig. 3   Invited lecturers. Top, from left: Prof. M. Jinno and Dr. H. Hojo. Bottom, from left: Dr. Y. Takayama, Dr. T. Yamazaki, and Dr. K. Iguchi.

motivated, and described intensive efforts toward its standardization and future perspectives toward hardware virtualization and SDM networking.

On the second day, we had four invited lectures, starting from the one by Dr. Hiroshi Hojo of NTT BP (organized by IEEE Communications Society Japan Chapter) on the latest Wi-Fi technologies and their services, followed by those on optical satellite communication by Dr. Yoshihisa Takayama (NICT), smart houses and home area networks by Dr. Takefumi Yamazaki (NTT), and 8K UHDTV by Dr. Kazuhisa Iguchi (NHK). These lectures provided a unique opportunity to learn the latest trends in broadband applications of optical communication technologies.

The afternoon of Dec. 12 was devoted to "international sessions," which started from a plenary talk by Prof. Vincent W. S. Chan (MIT) entitled "From R&D to commercial deployment in a highly competitive environment and some thoughts for Japan-based organization" (Fig. 4). Firstly, Prof. Chan talked about his innovative researches in MIT and his deep connection with Japan. Then, he gave us valuable insights for Japan to keep competitive strength on a global stage. We also organized a workshop focused on expectations to optical communication industry and R&D in Japan from worldwide (Fig. 5). It was contributed by Dr. Atul Srivastava (NEL-America), Dr. Emmanuel Le Taillandier de Gabory (NEC), and Dr. Sze Yun Set (Alnair Labs). They expressed their expectations for optical communication community in Japan from a global perspective. Lastly, we held panel discussion with the speakers and discussed "What is expected to Japan-based organizations, especially from the viewpoint of optical communication systems".

Fig. 4   Plenary talk by Prof. Vincent W. S. Chan.

Fig. 5   Presenters of Workshop 2: from left, Dr. A. Srivastava, Dr. E. L. T. de Gabory, and Dr. S. Y. Set.

3. Rump session

In the evening of Dec. 11, after the reception, the rump session was organized as a customary event. This year's topic was "Silicon photonics: Innovative? Practical?" hosted by Prof. Koji Igarashi (Osaka University). After a brief overview on silicon photonics by Prof. Nobuhiko Nishiyama (Tokyo Institute of Technology), the attendees first had an intimate discussion at each table and then the opinions were shared by all the tables. The debates among pros and cons were stimulating and motivated continuous development of this field.

4. Award ceremony

During the technical sessions, the OCS award ceremony took place (Fig. 6). The OCS Technical Committee presented two awards: The "IEICE Communications Society OCS Best Paper Award" and the "IEICE Communications Society OCS Young Researchers Award" for excellent presentations at OCS technical committee meetings throughout the year. The OCS chair presented a testimonial, a glass trophy, and a book token to each award recipient. This year's winners are as follows:

- OCS Best Paper Award: "Multi-dimensional modulation and demodulation schemes in coherent optical communication systems," by Mr. Shota Ishimura and Prof. Kazuro Kikuchi (University of Tokyo)
- OCS Young Researchers Award: Dr. Tomofumi Oyama (Fujitsu Laboratories) for "Simplification of nonlinear compensation circuit for higher-order modulation formats by degenerating signal constellation"
- OCS Young Researchers Award: Dr. Masaki Wada (NTT Access Network Service Systems Laboratories) for "A study on mode-dependent gain control of C-L band 2 LP mode EDFA"

Fig. 6   OCS award-winners: from left, Dr. T. Tanimura (in place of Dr. T. Oyama), Dr. M. Wada, Dr. M. Tomizawa (presenter), Mr. S. Ishimura, and Prof. K. Kikuchi

5. Conclusion

We hope that the symposium left the participants with valuable insights into the latest research in the field, current and future industry trends, as well as the role of our community to meet global expectations. Last but not least, we would like to express sincere thanks to all the speakers, participants, and exhibitors, especially those from overseas for their invaluable contributions.

ICSANE2014 – with Special Tutorial Session on Air Traffic Control

Masanobu Tsuji
Japan Aerospace Exploration Agency (JAXA)

1. Introduction

The International Conference on Space, Aeronautical and Navigational Electronics 2014 (ICSANE2014) was held at Ramada Hotel Melaka, Malaysia on October 22 to 24, 2014. It was co-organized by the Technical Committee on Space, Aeronautical and Navigation Electronics (SANE) of IEICE and Center for Remote Sensing and Surveillance Technology (CRSST) of Multimedia University (MMU, Malaysia) with support of National Institute of Information and Communications Technology (NICT, Japan), Electronic Navigation Research Institute (ENRI, Japan), Japan Aerospace Exploration Agency (JAXA, Japan), MMU, IEEE Aerospace and Electronics System Society (AESS) Japan chapter, IEEE Geoscience & Remote Sensing Society (GRSS) Japan chapter. Melaka (English name: Malacca) is located about 150km south of Kuala Lumpur and facing to the strait of Malacca. The center of Melaka is famous of UNESCO world heritage site, too (Fig.1).

A total of 84 people from Japan, Malaysia, Korea and Thailand participated ICSANE2014. There were 40 presentations in 3 days. Moreover, Special tutorial session on air traffic control was given to the participants by ENRI experts in the first day of ICSANE2014.

Fig. 1   World heritage, Center of Melaka

2. Opening Ceremony

The opening remarks were given by Prof. Heng Swee Huay, Vice President for R&D division of MMU and Prof. Hirobumi Saito (JAXA, Japan). Prof. Heng Swee Huay mentioned MMU's history and her expectation to ICSANE2014 (Fig.2).

MMU was established as the first private university focusing to information and communication technology in Malaysia, 1996. Prof. Hirobumi Saito expressed gratitude for MMU's great contribution to hold ICSANE2014.

Fig. 2   Opening remarks

3. Technical Session

The covered areas of ICSANE2014 were as follows.
- Satellite and space-station systems
- Remote sensing and scientific observation technology
- Radar systems and applications
- Navigational and communication systems

After reviewing process of the technical program committee formulated by international members from Japan, Bangladesh, Korea, Singapore and Vietnam, 40 papers were accepted for presentation. In ICSANE2014 we had 8 technical sessions. Sessions on Space mission, Satellite were held on the 1st day, Sessions on Tracking and UWB radar, UWB and short range radar, Image analysis and processing, POLSAR image analysis and processing were held on the 2nd day. Sessions on Remote sensing algorithm and scattering analysis, Remote sensing system system and development were held on the 3rd day. IEICE/SANE members, MMU professors and ANGKASA, Malaysian Space Agency researchers chaired these sessions.

4. Special Tutorial Session on Air Traffic Control

ENRI provided a special session of half day on air traffic control. Experts of ENRI gave lectures of cutting edge technology, such as GNSS airplane landing, system, Next Generation Aeronautical Surveillance Systems, Safety and Human Factors in Aviation. Thanks to ENRI, participants of ICSANE2014 have learned much about air traffic control.

5. Awarding Ceremony

The Technical Program Committee conducted a review to determine the recipients and had an onsite meeting on the 2nd day, October 23rd. The committee conferred the Young Scientist Awards (YSA) to 3 persons listed below. The award ceremony was held as a part of welcoming event of ICSANE2014 (Fig.3).

Ms. Ayumi Yamaryo
University of Electro-Communications (UEC), Japan
  "3-Dimensional Imaging Method Exploiting Full Polarimetric Data for UWB Short Range Radar"

Mr. Tae-Ho Kim
University of Science and Technology (UST), Korea
 "Analysis of the Radar Backscatter from the Sea Surface Perturbed by Varying Surface Current Induced by Bottom Topography in Shallow Waters: Comparison of Numerical Simulation with SAR Data"

Mr.Shohei Seki
Tokyo Denki University (TDU), Japan
"Numerical and Experimental Evaluation of Localization Methods in a UWB MIMO Radar"

The organizing committee has also awarded the certificate of appreciation to Prof. Koo Voon Chet and MMU/CRSST staffs in recognition to outstanding contributions to the ICSANE 2014 (Fig.4).

Fig. 3   The award ceremony of YSA

Fig. 4   Awarding MMU/CRSST staffs
for their contribution to ICSANE2013

6. Future Plan of ICSANE

We are planning to hold the ICSANE2015 at Denpasar, Indonesia in the 1st week of December 2015. It will be held as a side event of the 22nd session on Asia Pacific Regional Space Agency Forum (APRSAF-22) and some kind of interaction with space technology working group of APRSAF-22 is expected. We would like to encourage you to submit papers, make presentations and discuss on your research results at ICSANE2015.

7. Acknowledgements

I would like to express gratitude and appreciation to all members of the organizing committee and the technical program committee, especially to Prof. Koo Voon Chet and MMU/CRSST staffs. Without their outstanding contribution we couldn't have the conference smoothly.

Also, I would like to appreciate National Institute of Information and Communications Technology (NICT,Japan), Electronic Navigation Research Institute (ENRI, Japan), Japan Aerospace Exploration Agency (JAXA), MMU (Malaysia), IEEE Aerospace and Electronics System Society (AESS) Japan chapter and IEEE Geoscience & Remote Sensing Society (GRSS) Japan chapter for their kind support to ICSANE2014.

8. References

[1]   ICSANE2014
      http://www.ieice.or.jp/cs/sane/eng/report_icsane2014.html
[2]   APRSAF
      http://www.aprsaf.org

Special Section on IEICE Transactions on Communications: Position Papers Exploring Innovative Intelligence and Technologies in Communications
– Summary and Published Papers –
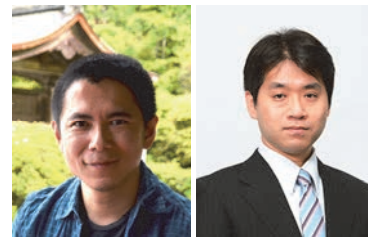
†Kazunori Hayashi and ††Takahiro Matsuda, *Guest Editors of the special section*

†Kyoto University, ††Osaka University

1. Introduction

In the IEICE Transactions on Communications, we have planned the special section ``Position Papers Exploring Innovative Intelligence and Technologies in Communications'' for the publication in January 2015 and March 2015. In this article, we would like to summarize the special section and briefly introduce the published papers in those issues.

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 10 papers before the 1st deadline and 16 papers before the 2nd deadline, and have selected the following 4 papers for publication after the strictly fair review process.

Published Papers in the January 2015 issue:

Paper Title: Concept of Chaos-Based Hierarchical Network Control and Its Application to Transmission Rate Control
Author: Masaki Aida
This paper focuses on a hierarchical relationship between micro- and macroscopic states of networks and proposes a novel framework for autonomous distributed network control based on chaos.

Paper Title: Localizing Sensors from their Responses to Targets
Author: Shigeo Shioda
This paper tackles a challenging problem of sensor localization only with proximity information of sensors. The author solves this problem by utilizing the fact that in sensor networks for target detection, sensors simultaneously detecting a target are likely to be located in close proximity.

Paper Title: Brain-inspired Communication Technologies: Information Networks with Continuing Internal Dynamics and Fluctuation
Authors: Jun-nosuke Teramae and Naoki Wakamiya
This paper focuses on computations in the brain, which is a complicated, heterogeneous, and large-scale network of neurons. Authors investigate similarities and differences between brain and information networks, and discuss a possibility to realize brain-inspired information networks.

Published Paper in the March 2015 issue:

Paper Title: Millimeter-wave Evolution for 5G Cellular Networks
Authors: Kei Sakaguchi, Gia Khanh Tran, Hidekazu Shimodaira, Shinobu Nanba, Toshiaki Sakurai, Koji Takinami, Isabelle Siaud, Emilio Calvanese Strinati, Antonio Capone, Ingolf Karls, Reza Arefi, and Thomas Haustein
This paper proposes architecture of 5G (5th Generation) cellular networks with millimeter-wave access. With system level simulations of the proposed architecture, authors show that the system rate 1000 times higher than the current system is achievable.

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).

Report on 6th Workshop of Internet Architecture in Chang Mai, Thailand

Keisuke Ishibashi
Chair, Technical Committee of Internet Architecture, IEICE

1. Introduction

The Technical Committee on Internet Architecture (TCIA) has held international workshops since 2009, aiming for further internationalization of IEICE. This year, TCIA successfully organized the 6th international workshop at Chang Mai, Thailand, on November 5 and 6, 2014, with dedicated supports of Chang Mai University (CMU). This article is a brief report on the workshop.

2. Workshop Overview

Associate Professor Ekkarat Boonchieng, Chair IA2014, Chiang Mai University, provided the opening speech to welcome the workshop. Then, we have two days program including one keynote speech, four invited talks and 23 technical presentations.

Firstly, we have a keynote speech entitled "Innovation Development Platform to serve True Corporation's ICT Infrastructure" by Dr. Panachit Assistant Director of True Corporation.

We also have four invited talks about tele-medicine, data-analytics, SDN-based multicast, and NFV, which cover a broad range of interesting topics on the current or future Internet Architecture. Also, speakers are from Thailand, Korea and Japan, so they also cover broad area of Asia-pacific region:

- "Challenges in Tele-Medicine Services: Networking Perspective," Sinchai Kamolphiwong（Prince of Songkla Univ.）
- "Vicar in Network," Shinichi Mori・Yuki Kato・Akira Sato・○Kenichi Yoshida（Univ. of Tsukuba）

- "Multicasting in Software Defined Networking Using Open vSwitch," Li Han・Shimin Sun・Sungchol Cho・Eunie Kim・Jaehong Kim・○ Sungyoung Han (Konkuk Univ.)
- "Recent Research Trend in Networking -- Software-Defined Networking and Network Functions Virtualisation –," ○ Katsuyoshi Iida (Tokyo Inst. of Tech.)

Finally, I must mention on the technical session. Actually, this year's workshop is the record-breaking in terms of the number of technical presentations and those presented by students. We have twenty technical talks and three posters, and 19 of them are from students. Because one of the purposes of the workshop is to motivate the student research activities on this area, we really would like to appreciate those presenters.

After the technical session, participants enjoyed Thai cuisine at the banquet. Specifically, the banquet after day 2 was held at the venue of the famous Yeepeng Festival and the participant had a fantastic experience (Fig.2).

3. Conclusion

We believe that all participants were satisfied with the presentations and discussions. TCIA thanked all the speakers and participants for their efforts. TCIA also thanked for warm hospitality by local staff member of CMU, specifically Ms. Khanita Duangchaemkarn and Associate Professor Ekkarat Boonchieng.

Next workshop is now arranged to be held in Japan. Please visit the TCIA web page http://www.ieice.org/~ia/eng/index.php.

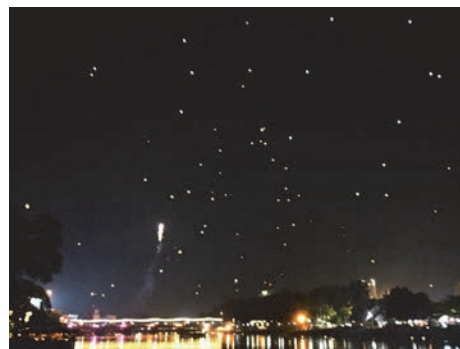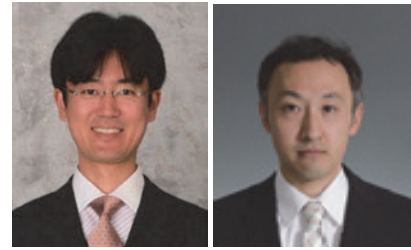
Fig. 1　Workshop participants

Fig. 2　Banquet at Yeepeng Festival

Joint Conference on Satellite Communications (JC-SAT 2014) Report

Satoshi Imata, KDDI R&D Laboratories
Amane Miura, NICT

1. Introduction

The Joint Conference on Satellite Communications 2014 (JC-SAT 2014) was held on 23rd and 24th of October 2014 at the Haeundae Grand Hotel in Busan. The conference has been being held annually with jointly organized by Technical Committee on Satellite Communications of IEICE (IEICE SAT) and Korea Society of Space Technology (KOSST) since 2000. It aims at information exchange and enhancing mutual understanding between satellite communication researchers and engineers both in Japan and Korea.

2. Program

Opening speeches were delivered by the organizing committee chairs, Dr. Ho Jin Lee, the president of KOSST, and Dr. Kanshiro Kashiki, the chair of IEICE SAT (Fig. 1). The number of presented papers was 36 including a keynote address and three special invited talks, and 104 participants attended. After ITU & Plenipotentiary related special session, the technical sessions followed with categorized as follows:

- System Design
- Meteorological Satellite System & Service
- Payload Technology
- Antenna Technology
- Satellite Control
- Satellite Transmission
- Satellite Applications

3. Best Paper Awards

The best paper awards of JC-SAT were granted to the distinguished papers selected each from Japan and Korea. One was "Transmission System for UHDTV Satellite Broadcasting" by Yoichi Suzuki (Fig.2), Masaaki Kojima, Akinori Hashimoto, Naoyoshi Nakamura, Shoji Tanaka, Tomohiro Saito and Naoji Okumura, and the other was "Rateless LDPC Codes for Satellite Broadcasting System" by Meixiang Zhang and Sooyoung Kim. A set of certificate was handed to each representative of the authors in the JC-SAT award ceremony.

4. Conclusion

A closing session was held in the end of day-2 with presentations of Dr. Toyoshima, who is the vice chair of IEICE SAT and Dr. Choi from KARI as a representative of KOSST. They remarked the great success of the conference and noted a plan for the next conference in Japan in 2015.

Fig. 1   Opening speech from Dr. Kanshiro Kashiki of IEICE SAT

Fig. 2   The JC-SAT Award winner and the presenter

Fig. 3   JC-SAT 2014 Participants

Report of 2014 IEEE International Conference on Communication, Networks and Satellite (COMNETSAT 2014)

Arief Hamdani Gunawan
TELKOM INDONESIA

1. Introduction

It is our great pleasure for the 2014 IEEE International Conference on Communication, Networks and Satellite (COMNETSAT 2014) to have a technical co-sponsorship support from IEICE Communications Society. COMNETSAT 2014 is the third COMNETSAT, held in Jakarta, Indonesia. The first COMNETSAT was held in Bali, 2012 and the second held in Yogyakarta, 2013.

2. Conference program and statistics

The conference held on 4th-6th November 2014, at Mercure Convention Centre Ancol, Jakarta. COMNETSAT 2014 proudly presented high-qualified papers (48.1% accepted ratio) through the support from 174 TPC members.

COMNETSAT 2014 also would like to deliver a high appreciation to:

- IEEE COMSOC Indonesia Chapter, IEEE Indonesia Section and Indonesia Section Joint Chapter of IEEE AESS and IEEE GRSS as sponsor.
- IEICE Communications Society as technical co sponsor.
- MakeDoNia and FAST as the organizer.
- Telkom Indonesia as the supporter.

Beside technical papers, COMNETSAT 2014 also presented two distinguished keynote with emerging topics. The keynotes are from regulator and academician. Dr. Ridwan Effendi, Commissioner at Indonesian Telecommunications Regulatory Authority presented "Regulatory Approaches on Communications,

Fig. 1   Dr. Ridwan Effendi Deliver Keynote

Network and Satellite" and Prof Robin Doss from Deakin University presented "Efficient Data Gathering in Wireless Sensor Networks".

COMNETSAT 2014 hosted in Mercure Convention Centre Ancol served the fresh condition with beach atmosphere. The venue is located at Taman Impian Jaya Ancol that also known as Ancol Dreamland is an integral part of Ancol Bay City, a resort destination located along Jakarta's waterfront. Ancol Dreamland opened in 1966 and is currently the largest integrated tourism area in South East Asia, boasting an international championship golf course, a theme park, hotels and other recreational facilities. There are 27 rides at Fantasy World, 8 pools at Atlantis Water Adventure and 8 shows at Ocean Dream Samudra. The event also equipped with fresh seafood dinner in Bandar Djakarta in the seaside of Ancol.

Fig. 2   After Dinner Photo Session at Bandar Djakarta

3. Closing

As COMNETSAT 2014 that was supported by IEICE Communications Society provided fruitful discussions and exchange of ideas between researchers during conference, IEEE COMSOC Indonesia would like also to call papers submission at 2015 IEEE International Broadband and Photonics Conference (IBP 2015). IBP 2015 also has a technical co-sponsorship support from IEICE Communications Society and it will be held on 23rd-25th April 2015 in Bali, more detail: http://www.ibp-conf.org.

COIN 2014 and Its History

Masafumi Koga[1], Sang-Kook Han[2] and Bongtae Kim[3]
[1]Oita University, [2]YONSEI University and [3]Electronics and Telecommunications Research Institute

1. Introduction

The 12th International Conference on Optical Internet (COIN 2014) was held from Aug. 27 to 29, 2014 at the Hyatt Regency Jeju, Korea. Leading international experts, totaling 193 participants from 6 countries in the Asia-Pacific region, got together and discussed a wide area of optical Internet technologies over 3 days. COIN has evolved and grown together with the broadband optical communication industry for twelve years. At this time, the International Advisory Committee has decided to terminate this conference.

This letter reports on COIN2014 and the history of COIN from birth to closure.

2. Conference Overview

The 12th International Conference on Optical Internet (COIN2014) was cosponsored by KT, SK Telecom, Lightron, Photonics Planar Integration (PPI), kt powertel, COWEAVER, KOREA ASSOCIATION for PHOTONICS INDUSTRY DEVELOPMENT, Electronics and Telecommunications Research Institute (ETRI), and technically cosponsored by IEEE Photonics Society, and the Optical Society of Korea (OSK), ETRI. Dr. Bongtae Kim, ETRI served as General Chair and Dr. Jong Hyun Lee acted as Organizing Committee Chair.

The submitted papers were peer reviewed by experts, and 77 were accepted for the oral session (include 33 invited talks); combined with the 43 posters, the total number of events reached 120. They were categorized into the following 7 technical scopes;
Topic 01: Optical Components and Photonic
Topic 02: Software Defined Optical Network
Topic 03: Optical Transport, Control, and
Topic 04: Access and Local Area Networks
Topic 05: Signal Processing for Advanced Optical Transmission
Topic 06: Optical Technology for Mobile Networks

Fig. 2   A look at Get Together Party held after workshop

Topic 07: Emerging Photonic Technologies (including Sensor, Optical Interconnect, and IoT)

The number of papers presented in each category is listed in Fig. 1. For this conference, 193 researchers and engineers got together; their breakdown according to country is Australia 3, China 29, Japan 26, Korea 128, Singapore 1, and USA 6.

Prior to the technical session, two workshops were organized on Aug.27; "Optical fronthaul and backhaul solution for LTE and 5G" and " Disaster relief network & network safety issue." Nine researchers gave presentations in two workshops.

After the workshop, participants engaged in friendly communication with each other set against the backdrop of the beautiful ocean visible from the Get-Together Party (see Fig. 2).

The conference started with opening remarks from Dr. Bongtae Kim in the morning of Aug.28, 2014 (see Fig. 3). After the address, four invited executive leaders gave keynote speeches as follows;

(1) "The new trends in telecommunication towards software-centric infra," by Dongmyun Lee, KT Korea.

(2) "Evolution of ultra-large capacity optical communication systems," by Masatoshi Suzuki, KDDI R&D Laboratories, Japan.

Fig. 1   Technical Papers presented in each category

Fig. 3   Opening remarks presented by Dr. Bongtae Kim, General Chair.

Fig. 4   An appearance of the technical session

Fig. 5   On behalf of ISC, Prof. Minho Kang addressed the ISC decision of termination

(3) "Evolution of transport networks toward 5G," SK Telecom, Korea.

(4) "The internet of the future and the role of photonics," by S. J. Ben Yoo, University of California, Davis, USA.

One tutorial session entitled "Swarm Intelligence: Fundamental Principles and Optimization Approaches," was presented by Zhongshan Zhng, University of Science & Technology Beijing, China.

3. Award

The best student paper was selected in each Topic (No applicable paper for Topic 02). The presenters and titles selected are as follows;

∗ Topic 01; [TP-08] "Bismuth Oxide-based Erbium-doped Fiber Amplifiers for DWDM-TDM Passive Optical Networks," by Minwan Jung, Univ. of Seoul, Korea.

∗ Topic 03; [TP-22] "Energy Consumption Study based on the Immunization Algorithm in Optical Network," by Dongyan Zhao, Univ. of Science and Technology Beijing, China.

∗ Topic 04; [FA2-4] "Optical Transmission of Baseband OFDM in IM/DD System by PDM based I/Q Channel Separation," by Sun-Young Jung, Yonsei Univ., Korea.

∗ Topic 05; [FB1-3] "Tbps Optical Super-Channel Receiver Models for Partial Demultiplexing of OFDM Spectrum," by Ahmed Galib Raza, KAIST, Korea.

∗ Topic 06: [FC3-4] "Transmit Power Control for Small Cell Networks in Urban, Suburban, and Rural Environments," by Sandu Abeywickrama, Univ. of Melbourne, Australia.

∗ Topic 07; [FC2-4] "Multi-function Time-frequency Transmission System over Optical Fiber," by Haijie Yu, Beijing Univ. of Posts and Telecommunications, China.

4. COIN: Birth and Closure

The first annual COIN conference was held in 2002, and the 12th (last) COIN conference was in 2014, both in Jeju islands. In retrospect, COIN's 12 year run started with the bursting of the dot-com bubble and the emergence of the FTTH-based high speed Internet. Called the 'Optical Internet,' it integrates the Internet and broadband optical communication technology.

Meanwhile, OIRC (Optical Internet Research Center,

established in 2000 by Professor Minho Kang) in Korea set up an alliance on optical communication research with CUBIN (established in 2000 by Professor Rodney Tucker) in Australia. The next year, 2001, KOIF (Korea Optical Internet Forum) in Korea and PIF (Photonic Internet Forum) in Japan were founded. Both organizations became strong supporters of COIN.

In 2001, a Korean delegation of four Korean professors including Minho Kang visited Japan to solicit IEICE support. The leaders of IEICE at that time, Professor Aoyama and Professor Kitayama agreed to establish a new international conference drawing on work in the Asia-Pacific region. With the strong support of IEICE, China and Singapore joined and COIN became a major international conference on the optical transport technology for high speed Internet.

At 7:30 am, on August 27, 2014, at Hyatt Regency Jeju, the International Steering Committee of COIN2014 decided the following:

- The ISC committee members appreciate the efforts of all organizing committee members and participants of the past twelve successful COIN Conferences held at Korea, Japan, Australia, and China.
- Considering the changing environment and technological maturity of the optical internet as a whole, the ISC committee decided to terminate COIN in today's form.
- The committee welcomes all continuing COIN-oriented efforts particularly in the Asia Pacific Region by new leaders in our area to promote the international cooperation and friendship.

This decision was announced at the Banquet on Aug. 28 by Prof. Minho Kang (see Fig. 5) and Prof. Tomonori Aoyama, just before Toast, made a small retrospect.

<COIN2014 International Steering Committee>
Minho KANG (Chair), Bongtae KIM, Tomonori AOYAMA, Ken-ichi KITAYAMA, Keping LONG, Hequan WU, Rodney TUCKER

5. Conclusion

COIN has been terminated and dissolved in favor of an as yet unknown direction. We hope the younger generation will organize some technical discussion group that can foster developments in optical communication while establishing good relations among nations.

Report on MiWEBA International Workshop on Millimeter-wave for 5G in CEATEC2014 (MMW5G)

Gia Khanh Tran[†], Shinobu Nanba[††]

[†]Tokyo Institute of Technology [††]KDDI R&D Laboratories

1. Introduction

MiWEBA International Workshop on Millimeter-wave for 5G (MMW5G) [1] in cooperation with IEICE-CS was held on 8 October 2014 in conjunction with the Combined Exhibition of Advanced Technologies (CEATEC) Japan 2014 to promote millimeter-wave communications in next generation 5G cellular networks, followed its previous event CC-HetNet2013 organized in Osaka Nakanoshima Center in October 2013. MMW5G was a half-day workshop opened by a speech from The Ministry of Internal Affairs and Communications, then followed by six invited talks whose presenters from both academic institutes and big telecommunication companies are experts on millimeter-wave communications. The workshop attracted more than 200 audiences worldwide.

2. Workshop committee

1) General Co-chairs: Prof. Kei Sakaguchi from Osaka University (Japan), Dr. Thomas Haustein from Fraunhofer HHI (Germany).

2) Steering committee: Dr. Shinobu Nanba from KDDI R&D Laboratories (Japan), Mr. Toshiaki Sakurai from Panasonic (Japan), Dr. Gia Khanh Tran, from Tokyo Institute of Technology (Japan), Dr. Ingolf Karls from Intel Mobile Communications (Germany), Dr. Emilio Calvanese Strinati from CEA-LETI (France), Dr. Isabelle Siaud from Orange Laboratories (France), Prof. Antonio Capone from POLIMI (Italy).

3. Scope and Objectives

The workshop provides a big vision of "Millimeter-wave for 5G" based on the EU-Japan coordinated project (MiWEBA) with distinct emphasis on channel measurements, modelling, system simulation, network architectures and resulting future services. The workshop will reassemble global R&D and ICT business leaders to explore the "NEXT" products and services based on pioneering millimeter-wave technology and to deliver business opportunities of the future.

4. Summary of MMW5G

MMW5G was held in conjunction with CEATEC Japan 2014 in Makuhari Messe International Convention Complex, which is one of the largest convention centers in Japan. The workshop contained two sessions in between a 30-min coffee break. The first half of the session include three presenters from academic research institutes and the second half of the session includes three presentations from industrial companies.

● **The first half of the session:**

The workshop moderator was Prof. Sakaguchi, one of the workshop co-chairs. He started the session by explaining the workshop purpose to triggering mm-wave communications in 5G. The opening speech was given by Mr. Kazuyoshi Suzuki from The Ministry of Internal Affairs and Communications (MIC) with title "Remarks from Ministry of Internal Affairs and Communications, Japan". The first technical talk was given by Dr. Thomas Haustein (HHI) - the other workshop co-chair with the topic "Harvesting Millimeter Wave Spectrum for 5G – Ultra High Wireless Capacity –Challenges and Opportunities – a view from the MiWEBA project". Dr. Thomas Haustein explained the trend for mm-wave in 5G and the role of MiWEBA in realizing mm-wave backhaul and access links. In 10 years, current bands capacity will not be able to handle the traffic demands and introducing new bands is inevitable. More explicitly, 1000 times system rate is achieved by 30x 60GHz smallcell BSs in 10 years. Then he described the challenges as well as the main points of MiWEBA project to realize a multi-band HetNet that can achieve such a huge performance. He also presented some mm-wave channel measurement results. The measurements were conducted using omnidirectional antennas to understand the nature of the channel. These measurements are used for mm-wave channel modeling. Finally, the antennas and prototypes of the MiWEBA project were presented briefly.

Following the first overview talk, the research team of Prof. Theodore S. Rappaport (New York University, NYU) delegated by two graduate students Mr. Mathew K. Samimi and Mr. George N. Wong respectively presented their latest research results on mm-wave propagation channel measurements by directional antennas to show physical evidence of the feasibility of mm-wave communications in cellular networks. The talk with title "3GPP-style Statistical Channel Models and Directional Beam-forming Models for Outdoor and Indoor Millimeter-Wave Wireless Communications" first showed NYU's recent and ongoing channel measurement results at 28GHz and 73GHz. All measurements were done with mechanically rotatable highly directional horn antennas. These measurements are then used to construct an omnidirectional pathloss model suitable for 3GPP/ITU.

The last talk of the first half of the session titled "Antennas, Propagation and Transceiver IC Technologies for Millimeter Wave Radio Systems for 5G Networks - the Tokyo Tech Wireless Fiber Project" was given by Prof. Makoto Ando (Tokyo Tech) - Vice President of IEICE. The speaker first presented designed antennas and measurement results of the so-called Tokyo Tech Wireless-Fiber Project, of which objective is to develop an integrated system at mm-wave bands including high-gain and high-directivity antennas and wideband RF/BB chips. The designed antennas have reached 80dB isolation at the same frequency and the same polarization which enable Direction Domain Duplex (DDD). Using the developed antennas, this team has built mm-wave mesh networks between building roofs in Ookayama campus area of Tokyo Tech and conducted measurements in 25 and 38GHz.

● **Poster session:**

A coffee break was held with a programmed poster session, where MiWEBA partners interacted with workshop audiences by presenting the latest research results, e.g. prototype of C/U splitting HetNet (Panasonic), system level analysis of mm-wave overlay HetNet (Tokyo Tech), large-scale base station cooperation with dynamic cell structuring (Osaka Univ), 5G green oriented MT-HetNets (Orange Labs), Outdoor mm-wave channel measurements (HHI), CPRI data compression and ETSI ORI standardization (KDDI Labs) etc.

● **The second half of the session:**

After the coffee break of fruitful direct discussions between posters' authors and researchers interested in the topic, the session was restarted with the first talk by Dr. Wonbin Hong (Samsung Electronics) about "Exploiting mm-wave-based Smart Antennas Technologies for Next Generation Cellular Networks". The speaker presented some recent testing results of mm-wave 5G handset antennas in Samsung. The company succeeded in testing the capabilities of beam steering and polarization-based MIMO on handsets despite of technical difficulties, according to Samsung. An advantage of mm-wave that was explicitly emphasized by the speaker was that mm-wave antenna produces no radiation towards human bodies.

The second talk of the second half of the session was given by an IEEE fellow Dr. Wen Tong (Huawei) with title "Mm-wave Technologies for 5G". In this talk, Dr. Wen Tong explained the company's interest on mm-wave technologies for 5G. There is still a matter of study that how much bandwidth in licensed or unlicensed bands should be allocated for 5G mm-wave. Huawei has got the experience of providing the service for the last world cup in Brazil. The traffic model of the stadium is quite different from the usual traffics in which uplink is higher than downlink. In the stadium, a huge uplink traffic was generated at the same time, so that 2000 BSs were required to handle the peak rate. Since the cellular network could not handle that huge traffic, most of this traffic was required to be handled

Fig. 1   Workshop on Millimeter-wave for 5G

by the local Wi-Fis. Huawei claims that they have reached 115Gbps rate (70GHz-90GHz band, 9.6GHz BW, 2x2 MIMO and 64QAM). Yet it is difficult to conclude whether mm-wave is capable of providing seamless ubiquitous coverage or not. Service outage and the requirement of fast beam alignment are the important challenges that must be addressed first, according to Huawei.

The last talk of the session was delivered by Dr. Geng Wu (Intel) about "5G Mm-wave Communication: Network Architectures and Platforms". Dr. Geng Wu started with 5G requirements on network and device platforms including an air interface with interference mitigation, beam-forming and new waveforms, a new spectrum architecture allowing licensed, unlicensed and shared spectrum, and a novel ICT platform with cell densification, overlay network integrated Multi-RAT and intelligent network cloud. He then explained various 5G network architecture trends e.g. overlay networks for high frequency bands and energy saving, underlay networks for wearables and proximity services. In the end, he presented Intel's 5G research and technology.

Throughout the workshop, audiences raised many questions for the speakers. One of the questions is about the first candidate frequency for 5G. There are several tradeoffs to decide about the frequency, such as range, antenna size, and availability. The answer to this question is yet to be determined through regulation, standardization and research. Another question that was raised was whether whole area is going to be covered by small cells or only some areas are served by small cells on-demand. Another concern is about the ownership of the small cells and the relation with the macro cell and backhaul. The concept of virtual operator can be an answer to this issue. A question for the manufacturer was about whether user equipment or the network will be the trigger of the mm-wave chipset. There is still no exact or clear answer to this question.

There are still many open issues to realize 5G mm-wave which challenge researchers of the field in the next few years. But there is no doubt that mm-wave has been becoming one of the strongest candidates to be introduced in future cellular networks.

References

[1]   http://www.miweba.eu/?page_id=251
     (Slides of invited talks are available)

[2]   http://www.ceatec.com/en/

IEICE-CS Related Conferences Calendar

Date	Conference Name	Location	Note
17 Nov. - 19 Nov. 2015	The 4th ENRI International Workshop on ATM/CNS (**EIWAC2015**)	Tokyo, Japan	Submission deadline: 31 Mar. 2015
9 Nov. - 12 Nov. 2015	2015 International Symposium on Antennas and Propagation (**ISAP2015**)	Tasmania, Australia	Submission deadline: 3 July 2015
18 Oct. - 22 Oct. 2015	37th IEEE International Telecommunication Energy Conference (**INTELEC 2015**)	Osaka, Japan	Submission deadline: Closed
14 Oct. - 16 Oct. 2015	The 21st Asia-Pacific Conference on Communications (**APCC2015**)	Kyoto, Japan	Submission deadline: 20 Apr. 2015
4 Aug. - 7 Aug. 2015	10th Asia-Pacific Symposium on Information and Telecommunication Technologies (**APSITT2015**)	Colombo, Sri Lanka	Submission deadline: Closed
28 Jun. - 2 Jul. 2015	OptoElectronics and Communications Conference 2015 (**OECC 2015**)	Shanghai, China	Submission deadline: Closed
23 Apr. - 25 Apr. 2015	2015 IEEE International Broadband and Photonics Conference (**IBP 2015**)	Bali, Indonesia	To be held **soon**
25 Mar - 27 Mar 2015	The Twelfth International Symposium on Autonomous Decentralized Systems (**ISADS2015**)	Taichung, Taiwan	To be held **soon**
24 Mar. - 26 Mar. 2015	2015 9th International Symposium on Medical Inform-ation and Communication Technology (**ISMICT2015**)	Kamakura, Japan	To be held **soon**
9 Mar. 2015	The 8th International WDN Workshop on Cooperative and Heterogeneous Cellular Networks (**WDN-CN2015**)	New Orleans, USA	To be held **soon**
9 Mar. 2015	International Workshop on Smart Spectrum (**IWSS**)	New Orleans, USA	To be held **soon**
24 Feb. - 6 Mar. 2015	Asia Pacific Regional Internet Conference on Operational Technologies-Asia Pacific Advanced Network 2015 (**APRICOT-APAN2015**)	Fukuoka, Japan	Now in session
17 Feb. - 19 Feb. 2015	18th International Conference on Intelligence in Next Generation Networks (**ICIN2015**)	Paris, France	Done
12 Jan. - 14 Jan. 2015	The 29th International Conference on Information Networking (**ICOIN2015**)	Siem Reap, Cambodia	Done
2 Dec - 5 Dec 2014	2014 International Symposium on Antennas and Propagation (**ISAP2014**)	Kaohsiung, Taiwan	Done
4 Nov. - 6 Nov. 2014	2014 IEEE International Conference on Communicat-ion, Networks and Satellite (**COMNETSAT 2014**)	Jakarta, Indonesia	**Reported** on this issue
8 Oct. 2014	Millimeter-wave for 5G in CEATEC2014 (**MMW5G in CEATEC2014**)	Chiba, Japan	**Reported** on this issue
27 Aug. - 29 Aug. 2014	The 12th International Conference on Optical Internet (**COIN 2014**)	Seogwipo, Koreaa	**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
Feb. 2016	Management for the Era of Internet of Things and Big Data	Submission due: 19 June 2015 **See page 28**
Jan. 2016	Recent Progress in Antennas, Propagation and Wireless Systems Related to Topics in ISAP2014	Submission due: 6 April 2015 **See page 29**
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	To be issued
Sep. 2015	Emerging Technologies on Ambient Sensor Networks toward Future Generation	To be issued
Aug. 2015	5G Radio Access Networks [Part I] Radio Access Technologies and System Design	To be issued
Jul. 2015	Electromagnetic Compatibility Technology in Conjunction with Main Topics of EMC'14/Tokyo	To be issued **soon**
May 2015	Recent Progress in Radio Propagation	To be issued **soon**
Apr. 2015	No special section in this issue	
Mar. 2015	Position Papers Exploring Innovative Intelligence and Technologies in Communications	Vol. E98-B, No.3
Feb. 2015	Quality of Diversifying Communication Networks and Services	Vol. E98-B, No.2
Jan. 2015	Position Papers Exploring Innovative Intelligence and Technologies in Communications	Vol. E98-B, No.1
Dec. 2014	Technologies and Architectures for Improving Scalability, Reliability, and Robustness for Future Information Networks	Vol. E97-B, No.12
Nov. 2014	Network Virtualization, and Fusion Platform of Computing and Networking	Vol. E97-B, No.11
Oct. 2014	Recent Progress in Measurement and Design Techniques on Antennas, Propagation and Wireless Systems	Vol. E97-B, No.10
Sep. 2014	Ambient Intelligence and Sensor Networks	Vol. E97-B, No.9

Please confirm with the following IEICE web site for the latest CALL FOR PAPERS
http://www.ieice.org/event/ronbun-e.php?society=cs

-- Special Section on Management for the Era of Internet of Things and Big Data ---

The IEICE Transactions on Communications announces that it will publish a special section entitled "Special Section on Management for the Era of Internet of Things and Big Data" in Feb. 2016.

Smart devices like networked appliance and sensor, together with smartphone and tablet, are paving the way for the new era of Internet of Things (IoT) and big data. New value-added applications and services would emerge by means of huge amount of data sourced, stored and analyzed from everything connected to the Internet. This unprecedented era, demanding to cope with the huge amount of data as well as emerging devices and still ever-increasing networks and systems, will pose yet another challenge for management and operations arena. Thus, a special section is planned (scheduled to appear in the Feb. 2016 issue) to promote research and development of management for the era of Internet of things and big data. Many submissions are cordially encouraged.

1. Scope
This special section aims to identify the following topics for the era of Internet of Things (IoT) and Big Data:
- new management paradigms and architecture
- management theory (control theoretic management approaches, optimization and management methodologies)
- management functions (fault, configuration, resource, performance, security and privacy management)
- network management and operations (next generation network, overlays, virtual network, software defined network (SDN), network function virtualization (NFV) and content centric network (CCN))
- system management and operations (data center, cloud computing, virtualized system, smart grid, smart home, smart community, smart city and energy-aware operations)
- service and data management and operations (sensors, tags, RFID, big data, M2M and IoT)
- management models, management protocols and standardization
- implementation, prototyping and practice

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 **June 19, 2015 (JST)**. Authors should choose the Management for the Era of Internet of Things and Big Data 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: Kiyohito Yoshihara (KDDI Laboratories)
Guest Editor: Kazuhiko Kinoshita (Osaka University)
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------- Special Section on Recent Progress in Antennas, Propagation and Wireless Systems Related to Topics in ISAP2014 -------

The IEICE Transactions on Communications announces that it will publish a special section entitled "Special Section on Recent Progress in Antennas, Propagation and Wireless Systems Related to Topics in ISAP2014" in the **January 2016** issue.

The 2014 International Symposium on Antennas and Propagation (ISAP2014) will be held in Kaohsiung, Taiwan during December 2-5, 2014, which aims at providing an international forum for exchanging information on the progress of research and development in antennas, propagation, electromagnetic wave theory, and the related fields. This symposium is the 19th ISAP, and the series of the symposia have gained high reputation for its excellent quality of the presented papers. By taking this opportunity, the special section has been planned to publish papers on advanced technologies in antennas, propagation and the related fields. The special section seeks for submission particularly from, but not limited to, the authors of ISAP2014.

1. Scope
This special section aims at timely dissemination of research in these areas. Possible topics include, but are not limited to antennas and propagation technologies related to progressing technology for MU-MIMO, LTE, PAN/BAN, and wireless power transmission, so forth. The topics also include electromagnetic wave theory and its related topics including emerging topics for metamaterial and its antenna application.

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 period 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 only papers by electronic submission. Submit a manuscript and electronic source files (LaTeX/Word files, figures, authors' photos and biography) via the IEICE Web site https://review.ieice.orgregist/regist_baseinfo_e.aspx **by April 6th, 2015 (JST)**. Authors should choose the Recent Progress in Antennas, Propagation and Wireless Systems Related to Topics in ISAP2014 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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* Authors must agree to the "Copyright Transfer and Page Charge Agreement" via electric submission.
* Please note that if 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 the web-page, http://www.ieice.org/eng/member/OM-appli.html .

> EiC *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)

Service coverage for overseas members	Admission charge	Online Version		Paper Version (optional)
		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.
   4. If you want to change membership from Member (In Japan) to Overseas Member, you don't need to pay an Entrance charge.

● **Optional Rapid Mailing Service**
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 opposite 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 <u>the 1st day of every month.</u>

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

_____   _____
(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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Card number: [ ][ ][ ][ ] [ ][ ][ ][ ] [ ][ ][ ][ ] [ ][ ][ ][ ]

Expiry date: _____ / _____   Credit Card Holder: _____   Signature: _____
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 Communications Society - GLOBAL NEWSLETTER
Submission Guideline

1. About GLOBAL NEWSLETTER

The Institute of Electronics, Information and Communication Engineers Communications Society (IEICE-CS) GLOBAL NEWSLETTER has been established since 2002. We quarterly publish an English newsletter every March, June, September, and December.

1.1. Goal

Our goal is to share information between overseas/foreign members and other members in IEICE-CS as a global activity, and to show IEICE presence internationally.

1.2 Category of Articles

1) Messages from President/Vice President
   - An inaugural message from CS President is published once per year in June. Message from CS Vice President is published properly.
2) IEICE-CS Activities Now
   - IEICE General/Society Conference information/reports
   - Activities of Technical Committees
   - International activities of the society
3) IEICE-CS Related Conferences Reports
   - Information/reports on IEICE-CS related conferences
  - IEICE-CS Conferences Calendar (*)
4) Others
   - Essays, Laboratory activity reports, Technology reports, Messages from overseas/foreign members, etc.
   - Information from Sister Societies
   - Special topics (*)
5) IEICE-CS Information
  - Call for papers
  - From editor's desk (*)
*: planned / written by IEICE-CS Directors, Planning and Members Activities

2. Major notes for Contribution

Basically, IEICE-CS members and readers can contribute articles. IEICE-CS Directors, Planning and Members Activities may ask non-IEICE-CS members to contribute articles. The articles should be fruitful and profitable for IEICE-CS members, **NOT** for particular organization. IEICE-CS Directors, Planning and Members Activities may not accept an article for publication if it does not follow this guideline.

2.1 Template and Language

Please use template downloadable at the URL:
http://www.ieice.org/cs/pub/global_howto.html
Please use English for all articles.

2.2 Number of pages

Two to four pages are preferable. One page article is also acceptable. The maximum number of pages is eight. When you try to entry a contribution with five to eight pages, you need to negotiate with IEICE-CS Directors, Planning and Members Activities.

3. Copyright

The copyrights of all articles in the GLOBAL NEWSLETTER should belong to the IEICE. However, the original authors retain the right to copy, translate or modify their own manuscripts. In cases when a manuscript is translated into another language or when any portion of the manuscript is to be submitted to another publication, authors

should register the action with the IEICE, and the original manuscript should be clearly cited in the publications. Please see a web site related to IEICE provisions on copyright.
http://www.ieice.org/eng/about/copyright.html

4. Publication fee / Manuscript fee
No publication fee and no manuscript fee for all articles.

5. Schedule
Standard editing schedule is as follows. Please note that the schedule may vary due to public holidays or other circumstances. The exact deadlines are indicated in call for newsletters.

Publication date	1st , Mar.	1st, Jun.	1st, Sept.	1st, Dec.
Call for newsletters	1st Mon., Dec.	1st Mon., Mar.	1st Mon., Jun.	1st Mon., Sept.
Contribution entry	4th Fri., Dec.	4th Fri., Mar.	4th Fri., Jun.	4th Fri., Sept.
Submission of Manuscript/Copyright	3rd Fri., Jan.	3rd Fri., Apr.	3rd Fri., Jul.	3rd Fri., Oct.

5.1 Call for Newsletters
IEICE-CS Directors, Planning and Members Activities will give you the information on call for newsletters.

5.2 Contribution Entry
You should send **information on title, summary(around 50 words or less) and number of page** to IEICE-CS Directors, Planning and Members Activities by e-mail.
E-mail: cs-gnl@mail.ieice.org

5.3 Submission of Manuscript
You should send a manuscript both in word file and pdf file to IEICE-CS Directors, Planning and Members Activities by e-mail.
E-mail: cs-gnl@mail.ieice.org

5.4 Submission of COPYRIGHT TRANSFER FORM
COPYRIGHT TRANSFER FORM can be downloaded at:
http://www.ieice.org/cs/pub/global_howto.html
Signed **COPYRIGHT TRANSFER FORM** should be sent by one of the following ways:
- By email.
- By facsimile.

Address to send:
- In case of email: cs-gnl@mail.ieice.org
- In case of facsimile:
    Name: Publications Department, IEICE
    Facsimile: +81-3-3433-6616, Phone: +81-3-3433-6692

6 Contact Point
IEICE-CS Directors, Planning and Members Activities in charge of IEICE-CS GLOBAL NEWSLETTER, cs-gnl@mail.ieice.org

From Editor's Desk

● Communications Society Welcome Party in IEICE General Conference

The IEICE General Conference 2015 will be held at Ritsumeikan University, Biwako-Kusatsu Campus from 10th to 13th March. On the first day of the conference, Communications Society holds the Welcome Party from 17:00 to 19:00 at the Cafeteria in the campus. The objective of the party is to provide young engineers especially students with a good opportunity to meet and talk friendly with experienced researchers and engineers in various organizations. Anybody can join in the party for free.

Please come and join the Welcome Party in the evening of the first day !

For the information on the IEICE General Conference 2015, 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

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CALL FOR PAPERS

Innovating Communications Networks toward Sustainable and Smart Society

October 14-16, 2015   Kyoto University, Kyoto, Japan

The 21st Asia-Pacific Conference on Communications

The 21st Asia-Pacific Conference on Communications (APCC2015) will be held in Kyoto, Japan, the ancient Capitol of Japan with rich Japanese traditions combined with modern cultures. Since 1993, APCC has been the forum for researchers and engineers in the Asia-Pacific region to present and discuss about advanced information and communication technologies and services, while opening the door to the world at the same time.

Theme of APCC2015 is "Innovating Communications Networks toward Sustainable and Smart Society." Communications networks are now indispensable for our daily life and being used in various ways everywhere to make our life smart and comfortable and communication traffic is increasing in a very high pace. In addition, we need to pay attentions to sustainability of our society and communications networks. Thus, continuing innovation of communications networks with advanced technologies is strongly required.

Prospective authors are invited to submit original technical papers for presentation at the conference and publication in the conference proceedings. All papers of APCC2015 will be included in IEEE Xplore and IEICE I-Scover, and indexed by EI and Scopus. Furthermore, an opportunity will be provided for submission to a special issue on APCC2015 of IEICE Transactions on Communications.

Executive Committee

General co-chairs	Prof. Iwao Sasase (Keio Univ.)
	Dr. Katsumi Emura (NEC)
TPC co-chairs	Dr. Atsushi Murase (NTT)
	TBD
	TBD
TPC Secretary	Mr. Kohei Mizuno (NTT)
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Local arrangement co-chairs	Prof. Masahiro Morikura (Kyoto Univ.)
	Prof. Hiroshi Harada (Kyoto Univ.)
Publicity chair	Dr. Soichiro Araki (NEC)
Organizing chair	Prof. Masahiro Umehira (Ibaraki Univ.)
General secretary	Prof. Jin Mitsugi (Keio Univ.)

Suggested Topics

Ad-hoc and sensor networks	Green communications
Antennas and propagations	Social networks
4G/5G mobile networks	Home networks
Broadband wireless access	Cloud computing
Advanced modulation and coding	Overlay network and P2P networking
WLAN and WPAN	Software defined networks
Satellite and space communications	Broadcasting technologies
Cognitive radio	Multimedia communications
Dynamic spectrum access	Network and service management
Photonic network	Network and information security
Optical transmission	Networked applications and multicasting
Access and local area networks	QoS and resource management
RF/Microwave/Photonic technologies	Speech and video signal processing
Communication Circuits	Traffic engineering and management
Advanced signal processing	High-speed switching and routing
Internet of Things	Information and communication theory
M2M Communication	Test beds and experimental systems

Paper Submission

Paper submission will be managed via EDAS: http://edas.info/ - select [APCC2015].

Submission by April 20, 2015

For more information, please visit
http://www.apcc2015.ieice.org

Important Dates

Special Session/Workshop/Panel Proposal	March 20, 2015
Submission Deadline	April 20, 2015
Acceptance Notification	June 20, 2015
Camera Ready Submission & Author Registration	July 15, 2015
Registration Deadline	September 15, 2015
Conference Dates	October 14-16, 2015

Call for Papers of EIWAC 2015
The 4th ENRI International Workshop
on ATM/CNS – Global Harmonization for Future Sky –

ENRI

*ATM: Air Traffic Management   CNS : Communication, Navigation, Surveillance

Date: November 17 – 19, 2015   VENUE: KFC Hall in Ryogoku, Tokyo
Nov. 17: Plenary Session, Exhibition, Nov. 18 – 19: Technical Sessions, Exhibition

Air transport is now widely recognized as a key contributor to economic and social development. In order to maintain consistent air traffic growth in the world, continuous and harmonized safety improvement and modernization of air navigation systems must be taken into account.
Electronic Navigation Research Institute (ENRI), a national laboratory in Japan conducting research and development on air navigation systems, is pleased to announce that we will hold EIWAC 2015 in Tokyo under following theme and schedule.

Important Dates

Abstract submission deadline	: March 31, 2015
Notification of acceptance	: May 15, 2015
Final paper submission deadline	: September 15, 2015

Technical Areas

At the workshop, leading experts from research establishments, industry, regulatory authorities and academia will meet to share their ideas and their approaches. The following are the expected major topics.

- ATM (Air Traffic Management) Modeling
- ATM Performance
- Trajectory Management
- Airport Management
- Communication/Navigation/Surveillance (CNS)
- Safety
- Human Factors
- Avionics
- GNSS and related topics

- Traffic Capacity & Congestion Management
- Performance-based Operations
- Remotely Piloted Aircraft Systems(RPAS), UAS
- Aviation Weather
- Environment
- Air-Ground Integration
- Information Technology

Paper Submission

- Prospective authors have a choice of the track type for your presentation, either **Academic** or **Interchange**, which you can make on the submission site: **www.eiwac2015.jp/**
- **Academic track** provides a forum for academic discussions on ATM/CNS. Required abstract length is <u>one page</u>, and the final paper must be 4 – 8 pages.
- **Interchange track** provides a forum for interchanges on air transportation, operation and supporting technologies for future aviation. Required abstract length is <u>a half page</u>, and the final paper must be 2 – 6 pages.
- Adopted final papers in the Academic Track may be candidates for the Selected Papers from EIWAC 2015 which will be published as a book by Springer after the workshop.

Contact

EIWAC 2015 Secretary   E-mail : secretariat@eiwac2015.jp
For more details, Please visit **www.eiwac2015.jp/**