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Optical Technology Application to EMC Measurement

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1. Introduction

Optical technology can be effectively applied to the taking of EMC measurements because the fibers are not affected by an electromagnetic environment. This paper describes the basic configuration of an electromagnetic sensor and a radiation source, which are basic tools for taking EMC measurements. It further describes the advantages and disadvantages of the sensor and source and examples of an EMC measurement system using optical technology.

2. Electromagnetic field sensors

Electric and magnetic field sensors are basic EMC measurement tools. Figure 1 shows basic types of electromagnetic sensors. One type converts an electromagnetic field to DC or other levels. One example of this type converts the electric field strength to DC level, which is then converted to digital data by using an A/D converter. The data is then transmitted to a remote display unit [1]. The sensor stability is affected by fluctuations in optical signal and optical fiber transmission loss. As one example of factors causing fluctuation, laser diode (LD) transmitting power is affected by the temperature and the reflected optical power. As another example, fiber transmission loss changes with fiber curvature. However, using the digital data enables this type of sensor to avoid these effects. Sensors of this type are compact and precise. Among other things, they are used to calibrate immunity test facilities [2] and to measure specific absorption rates (SARs) [3].

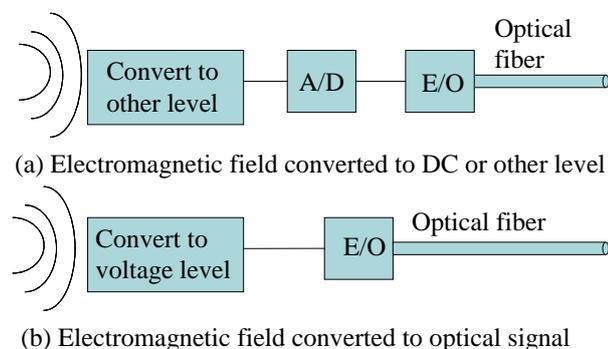


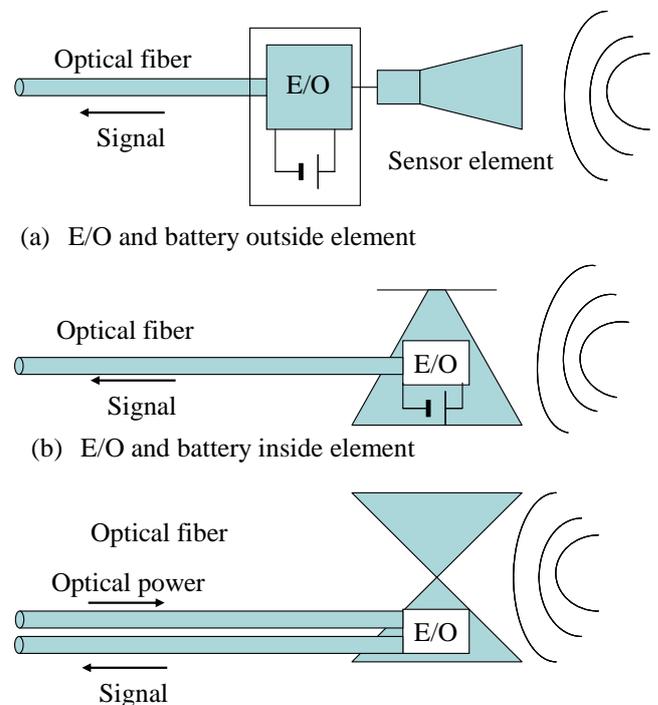
Fig. 1 Basic types of electromagnetic sensors

The other type converts an electromagnetic field to an optical signal directly. This enables it to measure the electromagnetic waveforms. However, its dynamic range is restricted by noise in the optical source (LD)

and photo detector (photo diode (PD)). Its most effective application is in measuring coherent waves and repeatable waves because the narrow bandwidth and averaging can be used in taking the measurements.

Figure 2 shows three basic configurations of direct conversion type sensors. In the first, the electrical to optical (E/O) converter and battery are located outside a sensor element. This type of sensor uses an optical fiber link instead of a coaxial cable. Its main advantage is that it can use a commercial optical fiber link and antenna. Since the antenna characteristics are well known and the fiber's transmission loss is lower than that of coaxial cable, this system is used when the distance between the antenna and the receiver is long.

The second type of sensor has its E/O converter and battery inside the sensor element. The main advantage of this type is that the sensor characteristics can be calculated numerically. On the other hand, its main disadvantage is that the sensor element radius must be large to house the E/O converter and battery. When a spherical dipole antenna with the E/O converter is used, the deviation of measured and calculated values is within 4 dB [4].



(c) E/O inside element

Fig. 2 Basic configurations of direct conversion type sensor

The third type is a sensor using an optical modulator. The optical signals are supplied to the sensor via an optical fiber and modulated signals are forwarded to an optical receiver. This type of sensor has unlimited operation time because it does not require a battery. It can operate at a wide frequency range because the optical modulator used as an E/O converter can operate from DC frequency to more than 50 GHz. Furthermore, the sensor can use a wire type antenna because most of the optical modulator materials are dielectrics such as LiNbO_3 and LiTaO_3 .

The sensor's main disadvantage is that its sensitivity is restricted by noise in the optical source and photo detector. The use of a Mach-Zehnder interferometer improves the sensitivity [5], and electric field strength of $20 \text{ dB}\mu\text{V/m}$ can be measured for coherent waves [6]. The frequency response is constant from very low (almost DC) frequency and the upper limit is restricted by the element length. When the element length is 8 mm, the sensitivity deviation is within 10 dB from 0.1 GHz to 10 GHz [7].

A magnetic field sensor has been developed that combines a loop antenna with an optical modulator. It enables a frequency range of above 10 GHz to be obtained [8].

3. Electromagnetic field source

Since the use of a coaxial cable affects the radiated electromagnetic field, a precise radiation source can be constructed by replacing the coaxial cable with an optical fiber link. In addition, the modulated signals can be used to control the system's radiation frequency. This enables the use of a network analyzer whose precision is superior to that of a spectrum analyzer.

Figure 3 shows the basic configurations of an electromagnetic field source. The first type of source connects an optical to electrical (O/E) converter with a battery to the input port of a radiation element. This system's main advantage is that it can use a commercial optical link and antenna. Its main disadvantage is that the enclosure housing an O/E converter affects the radiation properties.

The second type places the O/E converter and battery inside the radiation element. The element needs a large radius to house the O/E converter. The O/E converter usually uses a PIN photo diode (PIN-PD) whose upper frequency range is around 20 GHz. A wideband amplifier is needed to achieve large signals because the PIN-PD's output level is small. Using a spherical dipole antenna with the O/E converter achieves a maximum operating frequency of 1 GHz and the deviation between calculated and measured radiated field strength is within 1 dB [9].

The third type is constructed with only a photo detector and without the need for a battery. Most radiation sources require a battery, which places restrictions on size and operating time. In addition, a PIN-PD needs DC bias to operate at high frequency. A radiation source was developed by using a uni-traveling carrier photo diode (UTC-PD), which can

operate at high frequency without DC bias and whose saturation optical power is larger than that of a PIN-PD. This means that the photo diode's output level is larger than that of a PIN-PD when high power optical signals are used. The UTC-PD has a maximum operating frequency of more than 100 GHz and makes it possible to obtain radiated electric field strength of 0.1 V/m at a 1-m distance [10].

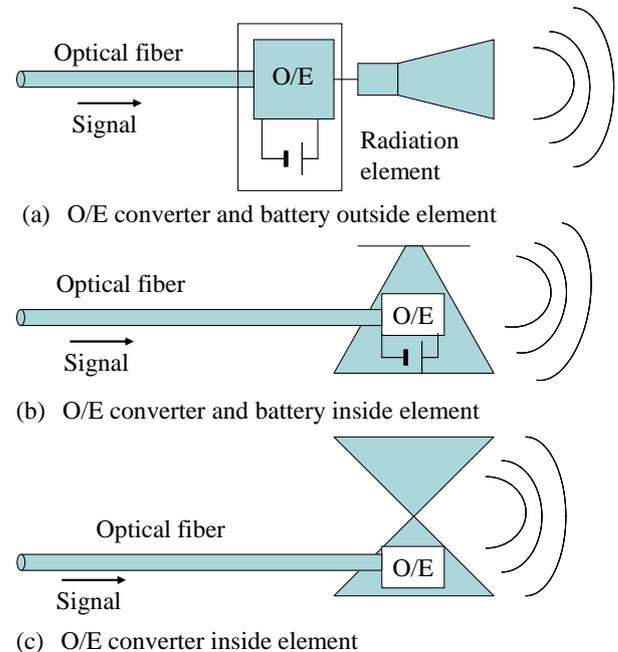


Fig. 3 Basic configurations of electromagnetic field source

4. Application examples

Optical technology is widely applied in the area of EMC. The next section of this paper describes several application examples.

4.1 Imitation equipment

In EMC measurements, the radiated electromagnetic field from the electrical equipment is measured. Equipment models are necessary for studying EMC measurements. Imitation equipment was developed as an equipment model for study.

The imitation equipment in Fig. 4 comprises a metallic box housing an O/E converter, amplifier, and battery. The radiation properties are calculated by using a wire grid model. The calculation-measurement deviation obtained with this equipment is within 4 dB [11].

We used imitation equipment to study the radiation properties of a printed circuit board (PCB) [12]. In this case, the PCB was placed on the imitation equipment. The calculation model comprised a wire grid model of the PCB and the imitation equipment was used to calculate the radiated electric field. Using a LiNbO_3 optical modulator as an E/O converter enabled the measurement accuracy to be improved because an optical modulator is not affected by the reflected

optical waves. We confirmed the calculation model's validity by comparing its calculated values with the measurement results.

In other applications, the imitation equipment is used as an equipment model. In our study reported in [13], we applied the imitation equipment to a study on a method for estimating far fields. We used the calculation values for the study because there was only a small deviation in the calculated and measured values of the radiated electric field. The use of calculation data is advantageous in that it is not necessary to consider measurement error caused by the use of equipment.

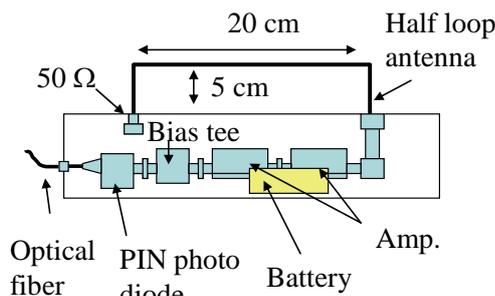
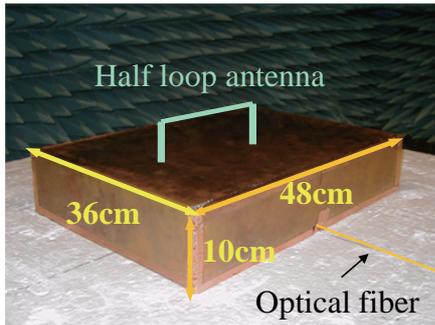


Fig. 4 External view of imitation equipment

4.2 Radiation source

In previous studies we have used a radiation source to evaluate the EMC test facilities and the shielding effect of the equipment enclosure. The spherical dipole [9] and the disc cone antenna were used for the evaluation.

Figure 5 shows the disc-cone antenna's configuration [14]. The antenna's input impedance is almost constant over a wide frequency range because the antenna has a self-complementary structure. A PIN-PD and a wide band amplifier were placed in the cone. The operation frequency, which was 10 GHz, is restricted by the frequency response of the E/O and O/E converters. An electro-absorption (EA) modulator was used as the E/O converter because an EA modulator is not affected by the reflected optical signals.

The optical source and the modulator were installed on the same base, the temperature of which was controlled. This enabled stable signals to be transmitted to the O/E converter. The deviation between calculated and measured values was within 3 dB. In our study reported in [15], the source was applied to evaluate the shielding effect of the equipment enclosure.

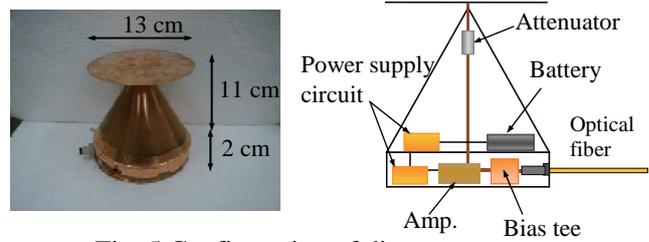


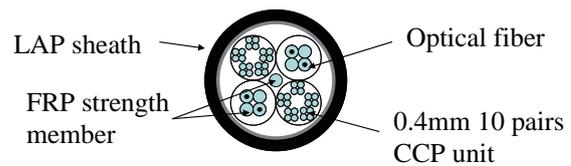
Fig. 5 Configuration of disc-cone antenna

4.3 Lightning surge observation

Optical technology is also useful for measuring high voltages and high currents. High voltage and current cause an electromagnetic induction, which affects measurement accuracy. Since this can be avoided by using optical fibers, optical technology has been applied to the measurement of high voltage and current for several decades.

Figure 6 shows an example lightning surge observation system [16]. The optical cable constructed from optical fibers and metallic twisted quad wire units was used for the observations. One of the metallic wire units was used for the power supply and the other was used to observe induced lightning surges. An E/O converter on a pole was operated by a battery, which was charged via the metallic wires in the cable to ensure long operation time. A switch isolated the wires from the E/O converter when a thunderstorm occurred. With this system, the surges were induced by the electric field's horizontal component and were induced even at the underground cable's terminal.

An optical fiber system was used to observe lightning directly striking a telecommunication center [17]. The system supplied data for improving the telecommunication system's immunity against lightning.



[Optical cable used observation]

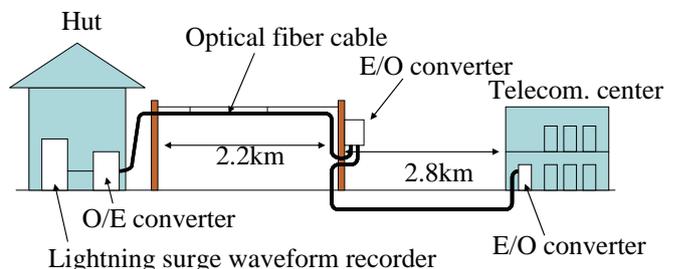


Fig. 6 Lightning observation system

5. Conclusion

Optical technology is widely used in the taking of EMC measurements because the use of optical fibers avoids the effects of electromagnetic induction. The main hardware units used in applying this technology are E/O and O/E converters. The progress that has been

made in photonic technology has increased the upper frequency of these converters as high as 50 GHz. Devices for sensing an electromagnetic field are particularly advantageous for measuring coherent waves and repeatable waves. Such sensors mainly need to be improved in the areas of sensitivity and reproducibility. We are anticipating the development of high dynamic range sensors that can measure transient waves such as electro static discharges and lightning waves.

The radiation source is advantageous in that with its radiation characteristics can be calculated numerically and decoupling can be achieved between receiving and transmitting points. Its performance factors that should be improved are its radiation power and reproducibility.

Since the use of optical technology leads to advances in EMC technology, we are looking forward to the achievement of further innovative developments in optical technology.

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From Bio-EMC Evaluation to Bio-EMC Design for Body-Centric Communications

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1. Introduction

The human safety or risk evaluation of wireless communications is actually a social problem. In reality, it is impossible to prove an absolute safety for any type of technologies. At the same time of continuously monitoring the newest research results on possible biological effects of wireless communication technologies, we should reasonably manage the relationship between their obvious merits and possible risks.

2. Bio-EMC Evaluation

The current knowledge tells us that there are mainly two types of biological effects of electromagnetic fields. One is the stimulation effect to nevus due to induced current in tissue. Another is the thermal effect due to energy absorption in tissue. Low frequency electromagnetic fields normally result in negligible energy absorption and no measurable temperature rise in the human body. However, when the frequency exceeds 100 kHz, the stimulation effect of current obviously grows because the cell membrane is approximately shorted, whereas a significant energy absorption and corresponding temperature rise may occur. In view of this feature, we mainly need to quantify the energy absorption in wireless communications for the purpose of bio-EMC evaluation.

The quantification of energy absorption in the human body is known as dosimetry. The most important quantity of dosimetry in bio-EMC evaluation is the specific absorption rate (SAR). The SAR is defined as the absorbed power per unit mass in unit of watt per kilogram.

I was first involved in the bio-EMC research when I was a graduate student in Takagi Laboratory of Tohoku University in the end of 1980s. We developed an automatic measuring system for three-dimensional spatial electric field distribution measurement (Fig. 1) [1]. My supervisors of Prof. T. Takagi and Prof. H. Echigo intended to estimate the electric field inside a human body from the measured scattered fields. This requires us to solve an inverse scattering problem, and the result is limited largely by the complexity of human body model and measurement error. Although the research was quite preliminary, it was initiative when we recalled it now. I still remember the measured data on antenna impedance versus the distance of a dipole antenna to myself. Prof. Fujiwara of Nagoya Institute

of Technology, the most recognized authority on dosimetry in Japan, said that his calculated result for a sphere head model shows a good agreement with my measurement. This may be the first point of contact between Prof. Fujiwara and me.



Fig. 1 Automatic electric field pattern measuring system (Sato et al., 1987).

After I worked six years in industry and university in the development of wireless communication transceivers, I joined Fujiwara laboratory in Nagoya Institute of Technology. The following eight years were just the period of rapid spread of cellular phones, which yields the dosimetry research for cellular phones very active. We made a lot of efforts on numerical dosimetry techniques for bio-EMC evaluation of cellular phones (Fig.2) [2]-[4]. The research topics involved the SAR in child head and the parallel computation technique for high-resolution dosimetry. The research results contributed not only to clarify the SAR level in anatomically based human body models but also to the standardization of SAR measurement methods. Moreover, the dosimetry technique has also been applied to quantify the exposure levels for various electromagnetic exposure experiments with animal as a most basic quantity to link a biological effect to the electromagnetic fields.

3. Toward Bio-EMC Design

Although the SAR evaluation has been standardized and routinized for current wireless technologies such as cellular phones and wireless LANs, various emerging

wireless technologies are appearing and corresponding bio-EMC evaluation may be required. For the SAR assessment of cellular phones, the world has invested a lot of money and human power into this issue for establishing a reasonable standard and evaluation procedure. Applying the same approach to each emerging wireless technology is obviously inefficient. The emerging wireless technologies mainly involve various body-centric communications such as personal area networks (PAN), body area networks (BAN), wireless power transmission and so on. The frequency may range from several MHz to tens of GHz. It is therefore very important to generalize the basic restrictions in bio-EMC evaluation as possible so that the evaluation routine can be easily applied to various new wireless technologies.

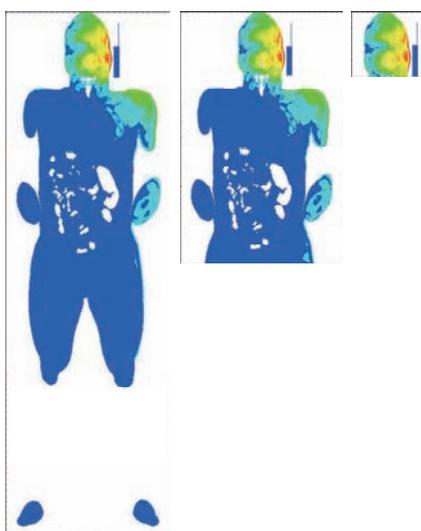


Fig. 2 Calculated SAR distributions in an anatomical human body model for cellular phones (Wang et al., 2004).



Fig. 3 Prototype impulse radio transceiver for human body communication. Above: on-body transmitter; below: receiver. The on-body transmitter is 3 cm x 3cm.

In this basis, we need a change from bio-EMC evaluation to bio-EMC design. The current technology progress and product cycle do not allow us to consider the bio-EMC evaluation after the wireless technology has been put into market. The bio-EMC evaluation should be made in the design stage, and each wireless engineer should have the basic knowledge to make his/her design meet the existing bio-EMC restrictions.

Based on this consideration, we are attempting this approach in body area communication transceiver design. Fig. 3 shows a prototype transceiver for human body communication. The transceiver employs an impulse radio technology to transmit a pulse trains in the frequency range of 10 - 50 MHz without carrier. The data rate reaches 1.2 Mbps, and the bit error rate is smaller than 0.01 up to 80 dB on-body path loss. The six-year experience in communication hardware development and eight-year experience in electromagnetic dosimetry seem helpful in this approach. During the design process, we have paid much attention to the bio-EMC issue in order to ensure the human safety and compliance with the corresponding restrictions [5].

Several years ago, there was a trend of change from EMC measure to EMC design. Now, the wireless engineers are facing a change from bio-EMC evaluation to bio-EMC design. Such a change in engineering aspect also contributes to the bio-EMC researchers so that they may have more time in fundamental and scientific researches in this area.

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Brief History and Future Prospects of Technology Development for High-speed Optical Fiber Internet Access Services

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1. Introduction

Since 2001, NTT West have provided high-speed optical fiber Internet connection services, FLET'S services, in a response to rapidly growing Internet traffic and the diversification of terminal devices and forms of usage. In this letter, I will review the brief history of technology development for our services, and describe our future technology development plans.

2. Development of Our Services

The launch of Windows 95 in the fall of 1995 spurred the widespread use of personal computers and the Internet in the home, since the Internet received a great deal of publicity via television and other media. In July 1999 we began offering its regional IP connection service trial, which was followed in 2000 by enhanced flat-rate Internet access services such as an ISDN service over ISDN lines and an ADSL Internet access service (ADSL service) using ADSL technology. Furthermore, to create a reliable, convenient and comfortable information-sharing society, we conducted R&D for the advance of IP and broadband-based systems, as a foundation for the information sharing society, and enhanced broadband access services and higher-value-added services to meet various user needs. In 2001, we commenced a broadband service, using optical fiber access lines to implement faster and more comfortable broadband services.

Subsequently, in a response to rapidly growing Internet traffic and the diversification of terminal devices and forms of usage, we began offering a new service in March 2005 as an IPv6-based commercial global network service, with such features as broadband and flexible quality control. In June the same year, optical fiber Internet access service (FTTH service) overtook the ADSL service in number of users, achieving one million users in August the same year. In August 2006, we commenced an optical fiber Internet access service for business, providing of up to 1 Gbps for users. Moreover, in March 2008, a new FTTH service began to offer stable transmission quality enabled by a dynamic Quality of Service (QoS) management technology. In November 2011, number of FTTH subscribers in us topped seven millions (Fig. 1).

3. Technological Elements of Our FTTH Service

The prevalence of streaming video and the diversification of terminal devices led to growing

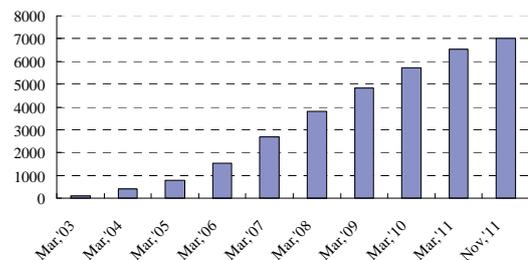


Fig. 1 number of NTT West FTTH subscribers (unit: thousands)

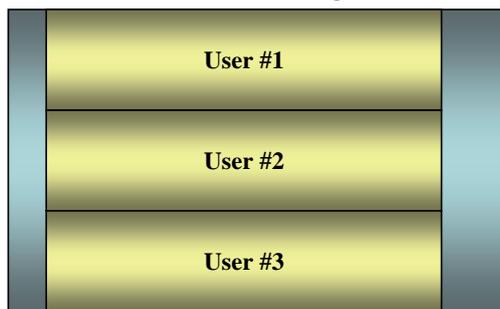
demand for broadband networks to implement packet-level quality control. Our FTTH service, which we began offering in March 2005, realized the operation of IPv6-based regional IP networks. The features of this advanced broadband service include super-fast Internet connections of up to 1 Gbps, reliable security, high-quality picture phone and video delivery.

Making optimum use of such IPv6 features as ease of address design and management, as well as extended address space, it became possible to meet the challenge of IPv4 address depletion resulting from terminal device diversification. We have employed IPv6 multicast technology in addition to unicast, to meet user needs for a video delivery service.

Additionally, for packet-level quality management we implemented two types of technology: priority control and fairness control (Fig.2). In fairness control, at the time of network congestion the bandwidth is allocated uniformly to active users, to ensure a minimum frame rate. On the other side, in priority control, data packets are sorted into high and low priority classes for end-to-end network communications; when network congestion occurs, low-priority packets are discarded.

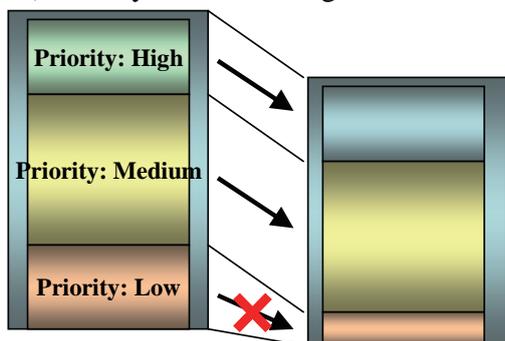
Regarding home gateway (HGW) devices, DHCP, DNS-Proxy and firewall capabilities have been implemented to offer “zero configuration” for end users, which is one of the IPv6 concepts. To ensure remote control capability, in addition to the aforementioned capability settings, the employed architecture inputs to individual HGW devices routing- and firewall-setting information from a remote server on the network. This makes it possible to set up and maintain each remote HGW without the need to log in to that HGW.

1) Fairness control among users



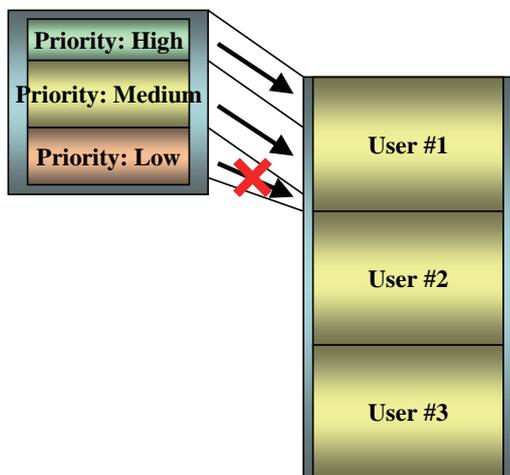
The bandwidth is allocated uniformly to active users.

2) Priority control among services



When network congestion occurs, low-priority packets are discarded.

3) Priority control among users with fairness control



When network congestion occurs within the bandwidth allocated uniformly to active users, low-priority packets are discarded.

Fig. 2 Fairness control and Priority control

reliability by means of a decentralized network architecture predicated on large-scale networks. It also offers network management aimed at ensuring quality for end-to-end communications.

Considering the key concepts of “openness” and “collaboration,” we open the interface specification to allow for mutual network connections with other businesses in the industry, and aim to create novel application services and values in collaboration with interested parties in other industries.

We have developed a high-capacity, high-reliability carrier-grade network offering dynamic QoS management by Call Admission Control, which provides bandwidth and quality on demand. This QoS management technology allows different packets with various quality requirements concerning delay, loss, bandwidth etc. to be present on a single network, integrating existent telephone networks and IP networks into NGN.

We have also put forth vigorous efforts to reduce HGW power consumption as a measure to reduce greenhouse-effect gas emissions and save energy. Power conservation has been achieved by using power-thrifty chips and fewer parts in HGW. Furthermore, use of sleep mode operation in standby further reduces overall system power consumption.

5. Future Technology Development Plans

The business environment in which we operates continues to undergo dramatic changes, such as the boom in smartphone and tablet PC use, as well as increased video traffic. To facilitate the growth of cloud computing services, home digital networking, smart communities and the like, with the underlying aim of expanding our business portfolio, we conduct R&D on networking that can handle future traffic increases flexibly and economically.

Specifically, when considering next-generation network architectures, it is difficult to accurately predict future traffic, in view of such factors as sharp traffic increases resulting from the rapid popularization of novel services. It is therefore important to develop architecture that is both versatile and economical. We will conduct R&D into swift and flexible responses to increased traffic so as to accommodate user needs, achieve economy by reducing system and maintenance costs, and design communications equipment to be especially low in power consumption, for reduced global environmental impact.

6. Conclusion

I described the brief history of technology development for our services, and introduced some idea regarding our future technology development.

4. Technological Elements of Our Latest FTTH Service

The Next Generation Network (NGN), while using fast broadband IP-based technology, ensures high

International Activities of the IEICE Communications Society in 2011

Takao NAITO and Hidetoshi KAYAMA
Director, Planning and Member Activities, IEICE-CS



1. Introduction

This article reports four topics related to the latest international activities in the IEICE Communications Society (IEICE-CS). First topic is international conferences which were recently held or supported by the IEICE-CS. Second topic is a report on our promotion activity which was done in the International Conference on International Conference on Communications (ICC) Kyoto Exhibition. Third topic is GLOBAL NEWSLETTER which is quarterly published by IEICE-CS. Finally, international cooperation with overseas societies is introduced.

2. International Conferences

In 2011, the IEICE-CS held or supported 22 international conferences in various technical fields [1]. Although one conference, which was sponsored by IEICE-CS, has been canceled because of the great East Japan earthquake, 2011 was a year that has the largest number within the past ten years as shown in Fig.1. In this section, the latest updates about international conferences to which the IEICE-CS was related are reported.

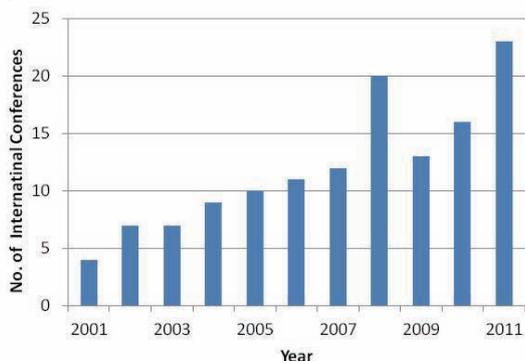


Fig. 1 No. of conferences supported by IEICE-CS

The types of sponsorship in which the IEICE-CS participates in international conferences can be classified into the following four categories;

(a) Promoter (“Sponsor,” etc.): The IEICE-CS assumes full responsibility for holding the conference, and is the sole promoter when the sponsoring parent body is the IEICE-CS alone. Responsibility for the practicalities of the event lies with the coordinating organization.

(b) Joint promoter (“Cosponsor,” etc.): The IEICE-CS assumes a level of responsibility proportional to the extent of its joint support for the conference, and is a

joint promoter when there are joint sponsoring parent bodies. Responsibility for the practicalities of the event lies with the coordinating organization.

(c) Participating promoter (“Technically cosponsor,” “Participate,” etc.): The IEICE-CS does not assume responsibility for all the practicalities of the event, but takes on part of the burden of work relating to papers and dispatches from committee members to the coordinating organization or the like.

(d) Supporting or backing roles (“Cooperation,” etc.): The IEICE-CS does not assume responsibility for all the practicalities of the event, but cooperates on matters such as informing its members of the event proposals.

We investigated the latest number about the IEICE-CS related conferences by updating it in the last year. Table 1 is the number of each category about the 22 international conferences in 2011. The half of international conferences to which the IEICE-CS was related is belonging to the category (d). On the other hand, in our web site [2], you can find that many international conferences related to communications systems and technologies which were held in Japan were sponsored or cosponsored by the IEICE-CS.

Table 1 Updated number of international conferences classified to categories, in 2011.

Categories	Number of conferences
(a) Promoter	0
(b) Joint promoter	3
(c) Participating promoter	9
(d) Supporting or backing roles	10

Next, we investigated the 22 international conferences in 2011 based on the location. Table 2 is the number of each region. As shown in the table, more than 70% of international conferences were held in overseas of Japan and the IEICE-CS is still related to worldwide especially in Asia, Europe and North America.

Table 2 Updated number of international conferences classified to regions, in 2011

Regions	Number of conferences
Asia	16 (include 5 in Japan)
Europe	2
North America	4

3. Promotion activity report

To improve the presence of IEICE-CS and increase the number of IEICE-CS members, we had a promotion activity at IEICE-CS booth in ICC Kyoto Exhibition. This Exhibition was co-located with ICC 2011 at the Event hall of ICC Kyoto on June 6 to 8, 2011. ICC is one of the major international conferences, and IEICE-CS, the Science Council of Japan and IEEE-CS co-supported ICC2011.

Our booth was located at the north part in the exhibition hall (Fig.2). In the booth, we showed samples of IEICE Transactions on Communications in English and IEICE-CS GLOBAL NEWSLETTER for participants in the exhibition. We also gave them information on IEICE-CS, its membership, and sister societies [2].



Fig. 2 IEICE-CS booth

4. Global Newsletter

IEICE-CS GLOBAL NEWSLETTER has been established since 2002. We quarterly publish an English newsletter every March, June, September, and December. This newsletter includes many articles such as messages from IEICE-CS President, Vice Presidents, and Fellows, activity reports on Regular/Ad hoc Technical Committees in the Society, IEICE-CS sponsored conference reports, essays, messages from overseas/foreign members, Laboratory activity reports, the latest technology reports, and etc [3]. 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. Table 3 shows the number of articles in our newsletter. The numbers in Vol. 1 to 3 were over 10, and those in Vol. 35 No. 1 to 4 in 2011 were completely recovered.

Table 3 Number of articles in 2002, 2003, 2010, 2011

Issued number	Issued date	Number of articles
Vol. 1	Aug. 1, 2002	15
Vol. 2	Nov. 1, 2002	16
Vol. 3	Feb. 1, 20002	11
Vol. 4	May 1, 2003	7
Vol. 5	Aug. 1, 2003	9
Vol. 6	Dec. 1, 2003	5

...
Vol. 32	Jun. 1, 2010	6
Vol. 33	Sept. 1, 2010	5
Vol. 34	Dec. 1, 2010	6
Vol. 35 No.1	Mar. 1, 2011	15
Vol. 35 No.2	Jun. 1, 2011	16
Vol. 35 No.3	Sept. 1, 2011	14
Vol. 35 No.4	Dec. 1, 2011	15

We had some minor renewals of our newsletter format. 1) To use a word “IEICE-CS GLOBAL NEWSLETTER” as a title, although in the past we used a word “Global News Letter” on the front cover. 2) To change numbering from only Vol. to a combination of Vol. and No. 3) To add English information of issued month on the front cover of our newsletter. 4) To add a table of conference calendar related with IEICE-CS activity in the newsletter. 5) To change a size of our newsletter from B5 to A4. We prepared a newsletter submission guideline in English for IEICE-CS overseas/foreign members to directly contribute articles to IEICE-CS GLOBAL NEWSLETTER. Please read submission guideline for overseas members published at pages 31 and 32 in this volume. We hope that these renewals and submission guideline will be very useful for overseas/foreign members.

5. Cooperation with overseas societies

So far, IEICE-CS has concluded Sister Society (SS) agreements with 5 societies (IEEE-ComSoc, KICS, VDE-ITG, KIEES, and CIC). The agreement provides mutual cooperation in promotion activities, discount of membership fee and publications etc. In 2011, CIC and IEICE-CS agreed to renew the SS agreement for upcoming three years, and the signing ceremony will be held at Shanghai in February 2012.

Up to now, the practical effectiveness of the SS arguments is limited. Therefore we will continue our efforts to strengthen the collaboration with the current SSs, and also try to open new collaborations with other societies in worldwide.

6. Conclusion

This article reported recent topics related to the international activities of the IEICE Communications Society. By supporting international conferences, promoting our society activities and publishing GLOBAL NEWSLETTER, the IEICE-CS continues to support all Society member’s international activities in the field of communications technology.

References

- [1] IEICE-CS international conferences information web page: <http://www.ieice.org/cs/conf/calendar.html>
- [2] IEICE-CS Sister Society information web page: http://www.ieice.org/cs/member/sister_society.html
- [3] IEICE-CS GLOBAL NEWSLETTER information web page: http://www.ieice.org/cs/pub/global_news.html

Report on Communications Society Annual Assembly at 2011 IEICE Society Conference

Noriyoshi Sonetaka

Director of General Affairs, IEICE Communications Society



1. Introduction

This article reports an overview of the 2011 Communications Society Annual Assembly held at the 2011 IEICE Society Conference at Hokkaido University. In the Annual Assembly, two special lectures were planned, and several awards were presented by Dr. Kazuo Hagimoto, President of the Communications Society (CS); Outstanding Contributions Award, Distinguished Contributions Award, and Communications Society Excellent Paper Award.

The first lecture in this year was “Lecture Title: the vision of communications networks based on the Great Tohoku Earthquake disaster experience” by Professor Fumiyuki Adachi, Tohoku University, and the second one was “Lecture Title: Brain-Machine Interface (BMI) on ICT network society” by Professor Shin Ishii, Kyoto University.



Fig. 1 Participants in Annual Assembly

2. Awards

The Outstanding Contributions Award is presented by the technical committee and chief editor services on the Editorial Board of Transactions on Communications and Communications Society Magazine. 16 members were awarded for their services prior to 2010. The Distinguished Contribution Award is presented for extraordinary planning activities and voluntary paper reviewing in the Communications

Society. 88 members were awarded for their contributions prior to 2010.



Fig. 2 Opening remarks by CS President Kazuo Hagimoto

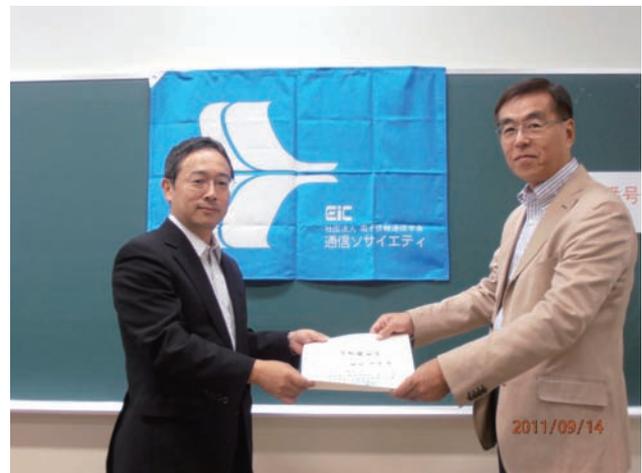


Fig. 3 Awards

3. Special lectures

At the Annual Assembly, two special lectures were arranged. The theme of one of the lectures was “a vision to create disaster resistant communications networks”, since we were confronted with a huge network trouble at the Great Tohoku Earthquake. The other was picked up on the brain-machine interface as an anticipating technology opening up new vistas of

communication networks.

In the first lecture, Professor Fumiuyuki started to talk on reviewing the damage to the communications networks and their services facing the crisis caused by the disaster.

Then, based on his own experience, the professor showed his belief, that is, the needs of communication services for each phase of disaster. He concluded the lecture by explaining some of the concrete efforts to create disaster resistant communications networks.



Fig. 4 Special lecture by Dr. Fumiuyuki Adachi



Fig. 5 Special lecture by Dr. Shin Ishii

The second lecture was “Brain-Machine Interface on ICT network society” by Dr. Shin Ishii, a professor at Kyoto University. He began the lecture with a brief description of BMI technologies by using many pictures and videos. BMI is a technology which controls information equipment such as computers and robots by the direct use of brain activities. Then, he gave the detailed explanations of network BMI technologies which enable us to interpret brain’s thoughts by utilizing ICT cloud and described how the result may change our life.

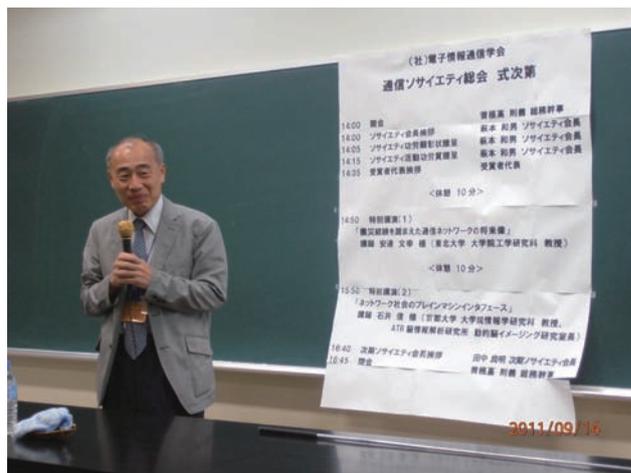


Fig. 6 closing remarks by President -Elect Yoshiaki Tanaka

4. Conclusion

This article reported an overview of the 2011 Communications Society Annual Assembly. As described in this article, the Communications Society supports member’s activities in the field of communications by giving such awards.

Finally, The Annual Assembly was adjourned with closing remarks by Professor Yoshiaki Tanaka, President-Elect of the Communications Society.

ICSANE 2011, International Conference on Space, Aeronautical and Navigational Electronics 2011, Denpasar, Bali, Indonesia

Kohei OSA
Assistant secretary of SANE, IEICE,
Weathernews Inc.



1. Introduction

The International Conference on Space, Aeronautical and Navigational Electronics 2011 (ICSANE 2011) was held at the University of Udayana, Denpasar, Bali, Indonesia, from 17th to 19th Oct. 2011, organized by Technical Group on Space, Aeronautical and Navigational Electronics (SANE), IEICE and the University of Udayana (UNUD), Indonesia.

The objective of the conference was to provide an opportunity for system engineers and researchers to discuss new and viable technical topics of electronics system in spacecraft, aircraft, ships and ground facilities. The main topics covered included the following:

- (1) Satellite and space-station systems,
- (2) Remote sensing and scientific observation technology,
- (3) Radar systems and applications,
- (4) Navigational and communication systems.

A steering committee, a local organizing committee and a technical program committee were organized to manage the conference. Co-Chairs of the steering committee were Prof. M.S. Mahendra, UNUD, Indonesia and Mr. Shigeru Ozeki, ENRI, Japan, and Vice Co-Chairs were Mr. Shin'ichi Hama, NICT, Japan, and Dr. Orbita Roswintiarti, LAPAN, Indonesia. Chair of the local organizing committee was Prof. I W. Arthana, UNUD, Indonesia, and Vice Co-Chair was Prof. I W. Budiarsa Suyasa, UNUD, Indonesia. Chair of the technical program committee was Prof. Korehiro Maeda, The University of Tokyo, Japan.

2. Overview of ICSANE 2011

All sessions of ICSANE2011 were held at the hall of graduate building, Sdirman campus of UNUD. The programs of sessions were scheduled as follows.

Mon, 17th Oct.:

- Opening ceremony
- Special session (two invited talks)
- Technical session 1 - 4

Tue, 18th Oct.:

- Technical session 5 - 8
- Poster interactive session

Wed, 19th Oct.:

- Technical session 9 - 10
- Organized session
- Awards ceremony

- Technical tour

During the conference, there were over 200 participants from five countries, Indonesia, Malaysia, India, U.S.A. and Japan. The conference was successful to encourage exchanges among participants even with some troubles by electric power failures twice.



Fig. 1 Group photo.

2.1 Opening Ceremony

Opening ceremony, started with a traditional Balinese dance, was held on 17th Oct. and Prof. Mahendra gave the opening address of ICSANE2011. After about an hour interruption caused by a black out, Prof. I Made Suastra, Vice Rector for Cooperation and Information Affairs, UNUD, read a welcoming message from the Rector, Prof. I Made Bakta in his behalf. Finally, Mr. Shigeru Ozeki, Co-Chair of the steering committee, introduced ICSANE and its activities. Besides, a local newspaper, Bali Post, covered the conference and introduced the ICSANE2011 on the next day's paper.



Fig. 2 Opening ceremony. (left: Balinese dance, right: Opening address by Prof. Mahendra)

2.2 Technical Session

ICSANE 2011, we had 10 technical sessions, a poster interactive session, a special session and an organized session. After reviewing process by the technical program committee, 61 papers were finally accepted for the presentation. 38 papers were accepted for the oral presentation. 19 papers were accepted for the poster presentation. In addition, we had 2 invited

papers for the special session, other 2 invited papers for the technical session and 1 paper for the organized session. Covering the main topics, those presentations were given and discussed after sessions as well.

In the special session on 17th Oct., Prof. Emi Nishina, Open Univ. of Japan, delivered a lecture on “What density would be necessary to transmit the essence of Balinese art by satellite communication?” and Dr. Orbita Roswintarti, LAPAN, on “History and Future of LAPAN”. In the organized session on 19th Oct, Prof. Wolfgang-Martin Boerner, UIC, delivered a lecture on “Development of airborne, high-altitude and spaceborne microwave Pol-In-SAR Sensors for environmental remote sensing in agriculture & forestry, and geo-environmental stress-change monitoring for East and South Asian regions”.

2.3 Awards Ceremony

The Technical Program Committee conducted a review to determine the recipients and conferred the following awards on them respectively. The Awards ceremony on the ICSANE2011 was held on 19th Oct., final day of the conference.

- Best Student Paper Award: Ms. Natsuki Hashimoto, Tokyo Denki University, Japan.
- Best Presenter Award: Dr. Tomoki Takegami, NEC Corporation, Japan.
- Best Paper Award: Prof. Josaphat Tetuko Sri Sumantyo, Chiba University, Japan.

The steering committee decided to give more awards as follows: The committee gave Steering Committee Award to Abd.Rahman As-syakur, University of Udayana, Indonesia; Best Contribution Award to Prof. Made Suidiana Mahendra, UNUD, and Dr. Ayom Widiampinto, LAPAN; Best Support Award to Prof. Josaphat Tetuko Sri Sumantyo, Chiba University; Best Support Award to ICSANE Account Team, UNUD; Best Support Award to ICSANE Support Team, UNUD; Best Achievement Award to ICSANE Support Team, UNUD.



Fig. 3 Technical session (left: organized session, right: poster session).



Fig. 4 Awards ceremony.

2.4 Reception and Tours

An evening banquet was held at the venue on 17th Oct. A farewell party was held on 19th Oct. sponsored by the Center for Remote Sensing, LAPAN.

A technical tour was arranged on 19th Oct. The participants visited to the airport head quarter office and the operation building, and the met agency office.

1) PT Angkasa Pura I, Persero, Kantor Cabang Utama, Bandar Udara Internasional Ngurah Rai, (the Ngurah Rai international airport head quarter office and operation building).

2) BBMKG Wilayah III, Divisi Cuaca dan Gempa Bumi, (Indonesia meteorological agency, Denpasar office).

Through the kindness of Prof. Nishina, a voluntary excursion was arranged in the evening of 18th Oct. Those interested attended the mini tour and appreciated gamelan music and dance, in spite of some happenings, sudden shower etc.



Fig. 5 Technical tour. (left: ATC facility of airport, right: Met agency office building.)

3. Future Plans of ICSANE

We have the plan for ICSANE 2012 as a joint conference with ISRS in Korea scheduled tentatively for October 2012. We would like to encourage you to report your research result at ICSANE 2012.

4. Acknowledgements

The conference would like to express gratitude and appreciation to all members of the organizing committee and the technical program committee, especially Prof. Mahendra, UNUD, and their local committee members from UNUD. Without outstanding contributions of all these members we would not have such an excellent conference.

ICSANE2011 was sponsored by Institute of Electrical and Electronics Engineers (IEEE), Indonesia Remote Sensing Society, Center for Remote Sensing, Institut Teknologi Bandung, Center for Remote Sensing - LAPAN, Fudan University of China, China, National Natural Science Foundation of China, Japan Aerospace Exploration Agency (JAXA), Japan, Center of Space Science and Application, Chinese Academy of Science, China, National Institute of Information and Communications Technology (NICT), Japan, Chinese Academy of Space Technology (CAST), China, Ocean University of China (OUC), China, State Key Laboratory of Integrated Services Networks, Xidian University, China, Electronic Navigation Research Institute (ENRI), Japan, Korea Ocean Research & Development Institute (KORDI), Korea, The Korean Society of Remote Sensing (KSRS), Korea, American Institute of Aeronautics and Astronautics (AIAA).

5. Reference

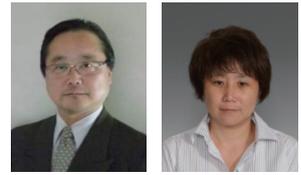
- [1] ICSANE 2011 official website, <http://www.ieice.org/cs/sane/ICSANE2011/>.
- [2] IEICE Technical Report SANE2011 (2011-10).

Joint Conference on Satellite Communications (JC-SAT 2011) Report

Kanshiro Kashiki, KDDI R&D Labs.

Naoko Yoshimura, NICT

Secretary of Technical Committee on Satellite Communications



1. Introduction

The Joint Conference on Satellite Communications 2011 (JC-SAT 2011) was held on 12 and 13 December, 2011 at Nagoya University. The conference has been cooperatively held by the Technical Committee on Satellite Telecommunications of IEICE and Korea Society of Space Technology (KOSST) every year since 2000, aiming at information exchange and mutual understanding between satellite communication researchers and engineers. Since the conference calls for papers to other countries in addition to Korea this year, we had presentations from China and Canada.

We had presentations of six invited talks and twenty technical papers, associated with related discussions, questions and answers over two conference days, with about 60 participants.

2. Program

The conference covered a wide array of topics regarding satellite technologies as follows:

- Satellite positioning and navigation
- Satellite communications for large-scale disaster mitigation
- Small and nano-satellites
- Amateur satellites
- Modulation, error correction and TPC technologies
- Sensor networks

Figure 1 shows a presentation at the conference.



Fig. 1 Presentation at the conference

We held a welcome party that generated conversation and the exchanging of information. Attendees were researchers from Korea, China, Canada and Japan, which created an international atmosphere.



Fig. 2 Party and exchange of technical information.

3. Best Paper Awards

Two presenters, Dr. A. Akaishi of NICT and K. Togashi of Tsuruoka National College of Technology, won the JC-SAT Award, which is recognized as the best paper. A certificate and gift set was handed to each representative of the authors during the party.



Fig. 3 JC-SAT Award presented by Prof. Nei Kato to Dr. Akaishi at the party.

4. Conclusion

We were affected by the Great East Japan Earthquake and moved the conference site from Sendai to Nagoya. Despite such great disaster, we successfully concluded the conference. We would like to thank all attendees and related people.

The next conference will be held in Korea, details of which will be provided on the Web page of this committee.

Report on the 9th QoS Workshop

Masato Uchida

Secretary of the Workshop, Kyushu Institute of Technology



1. Workshop and Venue

The 9th QoS Workshop was held on November 29, 2011 at Nagoya Institute of Technology, Nagoya, Aichi, Japan. The workshop was organized by IEICE Technical Committee on Communication Quality (CQ), which covers the broad ranges of research topics on communication quality. This workshop focused on the hot topics on new communication services to improve quality of life and communication quality.

2. Technical and Poster Sessions

54 people, including students and researchers from universities, institutes, and industries, participated in this workshop. This workshop consisted of a technical session (2 talks), a poster session (11 posters, Fig.1), and a demonstration session (3 demos, Fig. 2).

In the technical session, we had 2 invited talks: "Tele-Reality: Perception and Action Media beyond Space" presented by Prof. Seiichiro Katsura (Keio University), and "Basic Knowledge and Standardization Trends about the Biological Effects of Video" presented by Dr. Hiroshi Watanabe (AIST). Prof. Katsura introduced the enhancement of "perception and action" in remote environments without physical transfer. Dr. Watanabe introduced activities related to the standardization of image safety and scientific knowledge concerning major biomedical effects of moving images, including 3-dimensional video.

In the poster session, one-minute presentation was done by all poster presenters at the beginning of the session. In the poster room, all the attendees had active discussions in a friendly atmosphere. Poster awards were sent to Ms. Kimiko Kawashima with her poster "A pilot study on assessment method of visual fatigue for stereoscopic video distribution services" and Mr. Seiya Sasabe with his poster "Control schemes and performance evaluations of wireless mesh networks with twin mode antenna nodes". In addition, the best poster award was sent to Mr. Chandra Bobby with his poster "A study on network reliability evaluation for developing countries - One for all reliability and its experimental evaluation on backbone networks in Indonesia"(Fig. 3).

3. Conclusion

QoS and QoE related issues will attract more attentions in the research areas of Future Internet and future communications. The issues are growing into interdisciplinary areas of network and human activities.

The 9th QoS workshop was ended successfully. We would like to give a special thanks to all speakers, all participants, all committee members, and staffs for their hard work. The next QoS workshop will be held in autumn, 2012.

4. Reference

The 9th QoS Workshop Web Site,
http://www.ieice.org/cs/cq/jpn/qos_workshop9/



Fig. 1 Poster Session



Fig. 2 Demonstration Session



Fig. 3 Best Poster Award Winner

Report on the 25th Anniversary Celebration Optical Communication Systems Symposium

- Social Role and Future Prospect of Optical Communications -

Technical Committee on Optical Communication Systems



Optical Communication Systems

1. Overview

The 25th Anniversary Celebration Optical Communication Systems (OCS) Symposium, sponsored by the IEICE Technical Committee on OCS, and in cooperation with the IEEE Photonics Society Japan Chapter, the Photonic Internet Forum, and the IEICE Technical Committees on Extremely Advanced Optical Transmission Technologies (EXAT), Photonic Network (PN), and Optical Fiber Technologies (OFT), was held during Dec. 15–16, 2011 at the Toray Human Resources Development Center in Mishima City. The subject of the symposium was “Social role and future prospect of optical communications - Looking back over the past quarter of a century -”. The symposium agenda is shown in Table 1. There were 193 participants. This symposium included poster presentations introducing three national projects related to optical communications and an exhibition displaying the products of 15 companies in the lobby adjacent to the conference room.

Table 1 Symposium agenda.

Date	Program
12/15	1. Opening Remarks 2. Keynote Speech 3. OCS Award Ceremony 4. Poster Session 5. Workshop I 6. Reception 7. Rump Session
12/16	8. Invited Lectures 9. IEEE Photonics Society Commemorative Lecture 10. Workshop II 11. Closing Remarks

2. First day – Dec. 15

At the opening session of the symposium, Mr. Hiroshi Onaka, the IEICE OCS committee chair gave the opening address. He reported the activities of the OCS technical committee in 2011. As regards IEICE general/society meetings, in 2011 we hosted seven normal technical meetings and two special sessions.

The technical sessions began with a keynote speech entitled “Historical review and future of optical communication systems – endless challenges –” given by Prof. Shigeyuki Akiba of KDDI R&D Labs. and Tokyo Inst. of Tech. (Fig.1). He talked about the historical milestones of optical communication systems, and described a necessity of the endless challenges in

telecommunication field. Then a technology roadmap toward Petabit per fiber was discussed.



Fig. 1 Keynote speech by Prof. Shigeyuki Akiba.

The OCS award ceremony was held after the keynote speech (Fig.2). The OCS technical committee presented two awards: the “IEICE Communication Society OCS Best Paper Award” and the “IEICE Communication Society OCS Young Researchers Award” for excellent presentations at OCS technical committee meetings throughout the year. One paper was selected for the Best Paper Award.

- “10.3G/1.25G dual-rate OLT optical transceiver for 10G-EPON systems” by Mr. Satoshi Yoshima, Mr. Kenji Ishii, Mr. Satoshi Shirai, Mr. Masaki Noda, Mr. Naoki Suzuki, Mr. Masamichi Nogami, and Mr. Jun-ichi Nakagawa, of Mitsubishi Electric Corp.

Three researchers received the Young Researchers Award.

- Mr. Tatsunori Omiya (Tohoku Univ.): “Frequency division multiplexing 64 QAM-OFDM (420Gb/s) transmission over 160km”,
- Mr. Tetsuya Hayashi (Sumitomo Electric Industries): “Crosstalk variation of multi-core fiber due to fiber bend”,
- Mr. Takayoshi Mori (NTT Corp.) “Investigation of modal dispersion compensation using digital coherent receiver in multi-mode fiber transmission”.

The OCS chair presented a testimonial, a glass trophy, and a book token to each award recipient.

Twenty papers were presented by young researchers including 4 award winners in the poster session. Very active face-to-face discussions with senior researchers might stimulate their challengership.

After the poster session, Workshop I “Contribution of information and communication networks to realize more secure and reliable society” was chaired by Mr. Kazuo Hagimoto of NTT Corp. The workshop included four invited talks (Fig. 3). The invited talks described



Fig. 2 OCS award-winners: from the left, Mr. T. Mori, Mr. T. Hayashi, Mr. T. Omiya, Mr. H. Onaka (Presenter), Mr. S. Yoshima, and Mr. K. Ishii.

(1) ICT for disaster prevention and mitigation in the Tohoku-Pacific ocean earthquake, (2) R&D for realization of robust telecommunication networks against large-scale hazards, (3) radar network for weather observation, and (4) photonic technology to support the next generation telecommunication networks.



Fig. 3 Presenters at Workshop I: from the left, Mr. Osamu Takizawa, Mr. Masaki Fukui, Prof. Tomoo Ushio, and Prof. Ken-ichi Sato.

The rump session began after the reception. The title was “Valuable lessons from memorable research subjects”. Mr. Shigeru Tomita of NTT Corp., Mr. Shiro Ryu of Softbank Corp., and Mr. Kenji Yamamoto of NICT were invited as presenters, and they presented their memorable research subjects that they engaged themselves in the past. The subjects include (1) removal, maintenance, and operation of fiber drawing facilities as a secret story in holey fiber development, (2) lessons learned in research on coherent optical communications, and (3) 3D imaging system using electronic holography. The able chairmanship of Prof. Joji Maeda of Tokyo Univ. of Science produced a friendly atmosphere for this session, which was filled with fruitful discussion.

3. Second day – Dec. 16

The second day began with a technical session consisting of four invited lectures designed to enhance the participants’ knowledge of the latest optical communication technologies (Fig. 4). The first invited lecture was entitled “Robustness of optical access networks against large-scale hazards” and the speaker was Mr. Hideaki Kimura of NTT Corp. After summarizing the sufferings from the Tohoku-Pacific ocean earthquake, he discussed what we should do to make the telecommunication network a reliable lifeline. Then he introduced the recent R&D to construct robust networks. The second lecture was entitled “Standardization of smart grid” and the speaker was Mr. Masanobu Arai of NEC Corp. He introduced the latest situation and subjects of the smart grid technology and the trend of standardization. He also mentioned the role

of ICT in future. The third lecture was entitled “Trends of facility technology for data center” and this was given by Mr. Yosuke Nozaki of NTT Corp. After comparing the latest data centers based on the index of power usage effectiveness, he introduced the advanced energy saving technologies for data centers. The last lecture was sponsored by the IEEE Photonics Society Japan Chapter as a commemorative lecture. The lecture was given by Prof. Katsumi Kishino of Sophia Univ., and was entitled “GaN nanocolumn emission device and its related technologies”. He introduced the selective area growth technology of GaN nanocolumns and their device applications.



Fig. 4 Presenters at the invited lecture session: from the left, Mr. Hideaki Kimura, Mr. Masanobu Arai, Mr. Yosuke Nozaki, and Prof. Katsumi Kishino.

The final session was Workshop II, which was entitled “Technological innovations for supporting optical communications – looking back over the past quarter of a century and future prospect -”, chaired by Mr. Masatoshi Suzuki of KDDI R&D Labs. The workshop included five invited talks (Fig. 5) on (1) optical devices, (2) single mode fibers, (3) optical amplifiers, (4) optical node technologies, and (5) ultra high speed optical modulation and demodulation technologies.



Fig. 5 Presenters at Workshop II: from the left, Top: Prof. Kohroh Kobayashi, Mr. Ryoza Yamauchi, Mr. Shu Namiki, Mr. Takafumi Terahara, and Mr. Yutaka Miyamoto.

4. Conclusion

We believe that all the participants were satisfied with the presentations and discussions on social role and future prospect of optical communications that constituted this 25th anniversary celebration symposium. Finally, the OCS technical committee would like to thank all the speakers and participants for their efforts.

Report on 17th Asia-Pacific Conference on Communications (APCC2011)

Takashi SHIMIZU* and Hidetoshi KAYAMA**

*Secretary of APCC Steering Committee, NTT DOCOMO

**Member of APCC Steering Committee, NTT DOCOMO



1. Introduction

The 17th Asia-Pacific Conference on Communications (APCC2011) was held from October 2 to October 5, 2011 in Kota Kinabalu, Malaysia. APCC2011 was technically co-sponsored by IEICE Communications Society (IEICE-CS), Korea Information and Communications Society (KICS), China Institute of Communications (CIC) and IEEE Communications Society Asia-Pacific Board.

The conference consists of 3 keynote addresses, 3 invited talks and 43 technical sessions. It was attended by 188 researchers and engineers.

2. Opening Plenary and Keynotes

The conference was commenced by the welcome remark given by General Chair, Datuk Hod Parman. It was followed by the remark from Prof. Byeong Gi Lee, President of IEEE Communications Society, and the keynote address given by Prof. Khaled Ben Lataief, the Hong Kong University of Science and Technology. The talk introduced a number of key technologies and solutions towards the evolution of wireless systems, with particular interest in “Internet of Things”.

On the second and third day, two keynote addresses were given by Prof. Tharek Abd. Rahman, Universiti Teknologi Malaysia, and Dr. Mohd Ali Hanafiah, Malaysian Communications and Multimedia Commission (SKMM). Those excellent talks covered the latest developments of government ICT initiatives in Malaysia, which interested the audiences who came from all over the world.



Prof. Tharek Abd. Rahman

3. Technical Program

The Technical Program Committee received 395 paper submissions from 35 countries and regions, and

selected 232 papers for presentation by careful peer-review process, competed by 207 TPC members and a number of reviewers. Sessions were organized in six parallel tracks. Each session was well-attended and active discussions were facilitated.



A technical session

4. Best Paper Award

Each year, Best Paper Awards were selected by the Award Committee in APCC Steering Committee. The members of the committee made another peer-review of the top 10 high-score papers, considering not only technical aspects but also the impact of the paper in the relevant field. By averaging the score of the committee and the original score, following four papers were selected.

- 1) “Optimal Relaying Strategy for UE Relays,”
Jingyu Kim (Sungkyunkwan University, Korea)
Jung Ryul Yang (Sungkyunkwan University, Korea)
Dong In Kim (Sungkyunkwan University, Korea)



Recipients of the best paper

2) “Energy Efficiency Analysis of Cooperative ARQ in Amplify-and-Forward Relay Networks,”

Rong Huang (Beijing University of Posts and Telecommunications, P.R. China),
Chunyan Feng (Beijing University of Posts and Telecommunications, P.R. China) and
Tiankui Zhang (Beijing University of Posts and Telecommunications, P.R. China)



Recipient of the best paper

3) “Stackable ROADM with Optical Amplifier for use in IP-over-CWDM Networks,”

Md. Nooruzzaman (Osaka Prefecture University, Japan)
Nguyen Thi Thanh Thuy (Osaka Prefecture University, Japan),
Raja Zahilah (Osaka Prefecture University, Japan)
Osanori Koyama (Osaka Prefecture University, Japan)
Makoto Yamada (Osaka Prefecture University, Japan)
Yutaka Katsuyama (Osaka Prefecture University, Japan)



Recipients of the best paper

4) “An Enhanced Channel Estimation Method for MU-MIMO based LTE-Advanced System,”

Won Jun Hwang (Sungkyunkwan University, Korea)
Jun Hee Jang (Sungkyunkwan University, Korea)
Hyung Jin Choi (Sungkyunkwan University, Korea)



Recipients of the best paper

The certificate of the award was given to the authors in the conference dinner on October 4. This award was sponsored by CIC, KICS, IEICE-CS and IEEE ComSoc Asia-Pacific Board.

5. Conclusion

Since 1993, APCC has been the forum for researchers and engineers in the Asia-Pacific region to present and discuss topics related to advanced information and communication technologies and services, while at the same time, opening the door to the world. APCC2011 successfully provided an excellent venue and facilitated the research collaboration in Asia-Pacific regions.

Next year, APCC2012 will be held in Jeju Island, Korea between October 15-17, 2012. Detailed information can be found in <http://www.apcc2012.org>

Report on 15th ICIN (ICIN2011)

Osamu Mizuno^{*1} and Masami Iio^{*2}

^{*1}Vice chairman of Technical Program Committee/Kogakuin University

^{*2}Member of Technical Program Committee/ NTT Corporation



1. Introduction

In 1989, “The International Conference on Intelligent Networks (ICIN)” was launched to discuss not only technical aspects of intelligent networks but also business aspects among telecoms, vendors, and academics from mainly Europe, America, and Asia/Oceania.

Since intelligent networks has commercialized, the main topics of ICIN are shifting to “intelligence” of Information Communication Technologies (ICT) including IP-telecom convergence, and Next Generation Networks. Therefore, “ICIN” is not an appropriate acronym today.

2. Conference Overview

ICIN has been held 14 times almost every year or every 18 months in European cities. The 15th ICIN (ICIN 2011) was held from October 4 to 7, 2011 at Park-inn Alexander-platz in Berlin, Germany.

ICIN 2011 was organized by the non-profit organization, ICIN Event Inc. and supported by IEEE COMSOC and major standardization organizations including ITU-T, ETSI, and 3GPP. The IEICE Communication Society cooperated with ICIN and major technical societies in Europe. Over 160 people from Germany, France, Sweden, U.K., Norway, U.S., China, Korea, Japan and other countries attend the conference.

3. Topics of ICIN2011

Keynote Speeches

ICIN 2011 reserved one day for keynote speeches (Fig. 1).

The keynote speeches on topics such as standardization, information industry, and vendor and telecom’s viewpoint.

From Japan, Dr. Hiroaki Harai (NICT) was invited as a keynote speaker. He introduced the AKARI project and shown the current status of the proof-of-concept implementation of the network.

Other speakers are as follows;

- Musa Unmehopa (Alcatel-Lucent/Open Mobile Alliance) offered OMA’s API strategy for addressing opportunities and challenges in new areas
- Ulrich Reimers (Universität Braunschweig/the DVB Project) discussed approach to offering broadcast new possibilities in this changing environment.
- Uwe Kubach (SAP) shown how SAP Research envisions the future of business software with

the collaborative research project “Business Web”.

- Joe Weinman (Hewlett-Packard) pointed out service providers’s strategies coming cloud computing era.

In addition, following three keynotes have presented from partner organizations/companies;

- Graham Trickey (GSMA)
- András Vajda (Ericsson)
- Hans-Ulrich Schoen (Nokia Siemens Networks)

Technical Session

There were 13 technical sessions, and 39 papers were presented. Two sessions ran simultaneously, one concerning technical aspects the other concerning business/service aspects.

Three papers were from Japan: two from NTT and one from Fujitsu. Especially, “Service Oriented Network Architecture for Scalable M2M and Sensor Network Services” by Kazumine Matoba, Kenichi Abiru, Tomohiro Ishihara from Fujitsu Laboratories, won the best paper award. As TPC members, we’d like to express our gratitude to these authors for submitting such high-quality papers.

Many papers discussed telecom-based technologies/services such as service composition, service ecosystems, service enablers, cloud systems and mobile services. In former ICINs, many paper discussed based on NGN/IMS architecture. However, topics seem to shift service aspects on mobile based system.

Impressible trends at ICIN 2011 were M2M and argument reality. They seem to add value to both B2B and B2C services.

Many participants wished to break down the border between telecom and the Internet, and they felt that these ecosystems might be more complex. The above technologies are keys to success for business.

Poster and demonstration Session

Seven papers were presented during the poster sessions. During poster session, the committee required a demonstration (Fig. 2).

Service creation, social services, simulation and test environments, identity management, and terminal/network integration were demonstrated.

Tutorials and Workshops

The tutorial sessions, “Identity and Access Management for Web 2.0 and Cloud Computing” and “Next-

Generation-Networks to Future Internet (NGN2FI) Evolution” were held on the first day.

Also, the workshops “Smarter Living for Telco Customers” and “Business Models for Mobile Platforms (BMMP 11)” were held on the last day. These workshops focused on the causes and effects of the current explosion in platforms in the mobile ICT industry.

Social Events

The welcome reception was hosted by TECHNOLOGIE STIFTUNG BERLIN. They also enjoyed the Gala dinner with delicious selection of wine and beer (Fig. 3).

Awards

The following are the best papers and the best presentations awards;

- Best Papers

“Service Oriented Network Architecture for Scalable M2M and Sensor Network Services” by Kazumine Matoba (Fujitsu Laboratories, Japan) et al.

- Best Presentations

“The Sending Party Network Pays: a First Step Towards End-To-End Quality of Service” by Falk von Bornstaedt (Deutsche Telekom, Germany)

“Rich Communication Suite: the Challenge and Opportunity for MNOs” by Javier Arias (Telefonica Espana, Spain)

“Spatial Segmentation for Immersive Media Delivery” by Ray van Brandenburg (TNO, The Netherlands)

4. Conclusion

Programs and presentation materials can be downloaded from the ICIN site [1].

The ICIN committees would like to thank the paper authors and participants who are members of the IEICE Communication society, and the IEICE Communication society for supporting ICIN conferences, too.

The next conference, ICIN 2012, will be held 8-11 October 2012 in Berlin. CFP can be downloaded from the ICIN site. We welcome your participation.

References

[1] ICIN, <http://www.icin.biz/>



Fig. 1 Keynote Speech



Fig. 2 Poster Session



Fig. 3 Gala Dinner

Report on ISAP 2011 and ISAP International Steering Committee Meeting

Kunio Sawaya (Tohoku University), ISAP ISC Co-Chair
 Hiroyoshi Yamada (Niigata University), ISAP JSC Secretariat



1. ISAP 2011

2011 International Symposium on Antennas and Propagation (ISAP 2011) was held at Lotte Hotel Jeju, Jeju, Korea from October 25 to 28. This was the sixth ISAP outside Japan and the second ISAP in Korea since the symposium started to be held in Asia-Pacific region every year. The organizer was the Korea Institute of Electromagnetic Engineering and Science (KIEES). This symposium was co-sponsored by the IEICE. In addition, 25 companies and universities sponsored this symposium. Five academic organizations such as the IEEE AP-S and so forth supported as technical co-sponsors.

As General Chair, Prof. Young Ki Cho, Kyungpook National University, as TPC (Technical Program Committee) Chair, Prof. Sangwook Nam, Seoul National University, and as General Secretary, Prof. Sungtek Kahng, University of Incheon, served.

The size of the symposium reached the top level of former ISAP symposia as shown in Table 1. Papers were submitted from 32 countries/regions not only in Asia-Pacific but all over the world. Table 2 shows the ranking countries/regions with accepted papers number of five or more. Approximately 300 reviewers nominated by international review system contributed energetically multiple-review work in a limited time and supported TPC.

After two full-day and four half-day short courses and welcome reception at Lotte Hotel Jeju on October 25, opening ceremony as shown in Fig. 1, four plenary talks, 62 technical oral sessions and two poster sessions were presented in three days from October 26 to 28.

The plenary talks were “Fast and cost-effective OTA-MIMO measurements in reverberation chamber” by Prof. Per-Simon Kildal (Chalmers Univ. of Technology, Sweden), “Recent R&D programs of microwaves, mm-waves, and THz technologies in Korea by KCC” by Prof. Sang-Won Yun (Sogang Univ., Korea) shown in Fig. 2, “Next-Generation Metamaterials and Their Applications to Radio” by Prof. Christophe Caloz (École Polytechnique of Montréal, Canada), and “Antenna Technology Trends of Mobile Devices” by Dr. Austin Kim (Mobile Communications Division in Samsung Electronics, Korea).

Ten finalists were nominated as candidates for the Young Scientists Awards, and three of them shown in Fig. 3 received the award at the ISAP 2011 banquet at the Lotte Hotel Jeju on October 27.

Table 1 Major statistics

Papers submitted	Papers Accepted	Registered participants
470	444	507

Table 2 Number of accepted papers

Korea	159
Japan	157
Thailand	25
Taiwan	18
Malaysia	17
United States	13
China	12
India	8
Iraq	5
Sweden	5



Fig. 1 Opening ceremony



Fig. 2 Plenary talk by Prof. Sang-Won Yun



Fig. 3 Young Scientist Award winners

2. ISAP ISC meeting

ISC (International Steering Committee) also set up ISAP Archives recording all papers presented at the previous ISAP. At this moment all papers from the first ISAP in 1971 to ISAP 2010 have been digitized and online, as a result everybody in the world AP community can access ISAP papers free of charge. This service will respond to expectations of AP specialists in the world and enhance motivations for Asian people to submit papers. The URL of the ISAP Archives is <http://ap-s.ei.tuat.ac.jp/isapx/> and the top page is shown in Fig. 4.

After the first ISAP in Sendai, nine symposia were held only in Japan. However, since beginning of 21st century, R&D into AP technologies is making great progress and more people are joining AP community, especially in Asia-Pacific region. Reflecting these trends, discussions arose to hold ISAP more frequently and to open them to Asia-Pacific region. In 2001, ISAP JSC (Japan Standing Committee) was organized in Communications Society of IEICE. JSC started to sound possibilities of holding ISAP outside Japan and negotiate with several foreign leaders in potential countries. The first ISAP outside Japan was held on Korea, 2005, then this was the second ISAP in Korea.

In order to hold ISAP continuously and smoothly, we established ISAP ISC during ISAP 2006 with 9 countries/regions. Now the number has reached 11, Australia, China, India, Hong Kong, Japan, Korea, Macao, Malaysia, Singapore, Taiwan, and Thailand. The mission of the committee is planning future ISAP and establishing operation rules to steer the symposia smoothly using international cooperation.

In the period of ISAP 2011, ISC regular meeting was held. Members are shown in Fig. 5. The ISC meeting was chaired by Prof. Young-Ki Cho and Prof. Kunio Sawaya. After the reports presentation of the last ISAP in Macao and ISAP 2011 in Jeju, Japan presented the ISAP 2012 in Nagoya and China introduced the outline of ISAP 2013 in Nanjing.

Next, we officially decided ISAP 2014 to be held in Kaohsiung, Taiwan, among two candidates by vote. For following symposia, Pattaya (Thailand), Kuala Lumpur (Malaysia) and Tasmania (Australia) proposed to invite ISAP 2015. In addition, Japan announced the intention to hold 2016 ISAP.

3. Summary

ISAP 2011 provided to contributors and participants an academic and friendship atmosphere for exchanging advances in AP research and strengthening relationship. Many young students also had a chance to discuss with the experts in their fields. The upcoming ISAP 2012 will be held at Nagoya Congress Center in Nagoya, Japan, from October 29 through November 2, 2012. Deadline for paper submission is April 27, 2012. Please see the details in the ISAP 2012 Web site shown in Fig.6 (<http://www.isap2012.org/>).

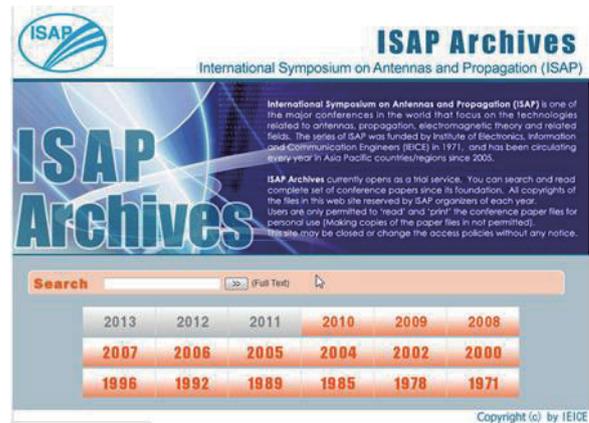


Fig. 4 ISAP Archives



Fig. 5 ISAP ISC meeting



Fig. 6 ISAP2012 Homepage

Report on the 29th AIAA International Communications Satellite Systems Conference (ICSSC-2011)

Hiromitsu Wakana

National Institute of Information and Communications Technology



1. Introduction

The International Communications Satellite Systems Conference (ICSSC) 2011 was held in Hotel Nikko Nara and Nara Centennial Hall, Nara, Japan from 28 November to 1 December 2011, co-organized by American Institute of Aeronautics and Astronautics (AIAA) Communications Systems Technical Committee (CMSTC), AIAA Japan Forum on Satellite Communications (JFSC) and Tokyo Metropolitan University, in cooperation with the Communication Society of IEICE.

The ICSSC-2011 theme is “Broadband Bridge to Asia Pacific”, and explores the state-of-art satellite communications technologies and satellite-based global broadcasting services to solve social, economic and environmental problems not only in the U.S. and Europe but also in Asia and Pacific countries. The AIAA ICSSC has been held in order of North America, Asia, North America and Europe, since the 17th ICSSC was held in 1998 in Yokohama, Japan. That was the first time in the ICSSC’s 32-year history outside North America.

In terms of the ICSSC-2011, the conference committee had a sincere and intensive discussion on whether the conference should be held as scheduled or should be suspended because of East Japan Great Earthquake on 11 March 2011 and Fukushima nuclear power plant accident. In fact, several international conferences, which were scheduled to be held in Japan, were suspended or changed their sites out of Japan. Since we often insist that satellite communications and satellite remote-sensing can play an important role in large natural disasters such as earthquake, flood, typhoons, cancellation or suspension of the conference due to natural disaster is equal to deny our arguments by ourselves. Therefore, the committee decided that ICSSC-2011 should be held at the same time and the same place as planned, although we worried whether enough many participants will attend the conference. Actually, 120 participants from 14 countries attended the AIAA ICSSC-2011.

2. Colloquium

The ICSSC-2011 consists of pre-conference colloquium, keynote speeches and a plenary session in the opening session, and technical sessions as well as social events and award ceremony. The colloquium, which is organized by Prof. Masahiro Umehira, Ibaraki University, has a theme of “Toward Ubiquitous Net-



Fig. 1 General Chair, Prof. Hajime Fukuchi.



Fig. 2 Deputy General Chair and CMSTC Chair, Dr. Mario Caron.

working over Asia Pacific”, and consists of three sections.

In the first section, three speakers presented current status of satellite communication services in Asia and Pacific, especially disaster recovery by satellite communications in Japan and R&D activities in China. Second, the concepts of integrated and hybrid satellite and terrestrial communication systems were presented from Korea, USA, Europe and Japan. Commercial hybrid service of LightSquared Inc. was presented with Skype from USA. Finally, panel discussion to explore the future of satellite communications focused on personal, broadband and mobile satellite communications.

3. Opening Sessions

On 29 November, the opening session with three key note speeches and a panel discussion was held in Nara Centennial Hall. Three keynote speeches, as shown in photos on the next page, were done by CEO class of US and Japan’s satellite companies to introduce satellite services evolutions such as integration with satel-

lite/terrestrial services, mobile broadband and satellite broadcast services. In US, Ka-band broadband spot-beam satellites and the rapid evolution of video content distribution are established. In the Great East Japan Earthquake, many satellite phones, VSAT terminals, SNV and portable satellite terminals have been used for emergency response. It was presented how satellite communications system was effectively used in the disaster situations and what should be improved based on the lessons learned from the disaster.

In the plenary session entitled “What we have done!”, what satellite communication and satellite remote-sensing community have devoted just after the earthquake were presented by JAXA, PASCO, NTT DoCoMo, SoftBank Mobile Corp. and NICT.

4. Technical Sessions

Even after the earthquake, we had about 90 excellent papers from over 30 countries. We wish to express our appreciation to authors and participants for their positive spirit of cooperation. Finally 76 technical papers were presented and 120 participants attended the ICSSC-2011 from 14 countries: Japan, USA, China, France, Korea, Canada, Luxembourg, Netherlands, Switzerland, Germany, Indonesia, Norway, Spain and UK.

Technical sessions, organized by Prof. Masayoshi Tanaka, Nihon University, cover the following issues:

- Advanced communication techniques: ground-based beam former, DVB-S2, LDGM codes, optical link.
 - Mobile broadband communication: integrated satellite-terrestrial, MEO constellation, MIMO-OFDM.
 - Advances in payload subsystems: high flexible linearizer, multiplexers, tri-fold deployable reflector.
 - Network protocol: laser communication, WSN, QZSS, TPC proxy, satellite integration in MANETs
 - Antenna and propagation: Ka/Ku rain attenuation, laser communication, 21GHz satellite broadcasting.
 - Earth observation systems: hitch-hiking Iridium, data budget, Radarsat constellation, SAR, X-band modem.
- The AIAA best professional paper award, best student paper award and AIAA JFSC best paper award were won by Dr. Chandra Koduru et al., Mr Takuma Kyo, and Mr Yoshiaki Suzuki et al, respectively.

5. Social Events and Award Ceremony

On 29 November, a welcome reception was held in the Nara National Museum. The attendees enjoyed a large number of exceptional Buddhist statues that trace the history of Japanese sculpture from the Asuka period through the Kamakura period.

On 30 November, a banquet was held in the Hotel Nikko Nara with Japanese traditional activities such as Opening sake barrel with wooden hummers “Kagami-Biraki”, Lion dance “Shishimai” and Pounding rice cakes “Mochi-Tsuki”, together with Japanese music of bamboo flute and drums. Foreign attendees enjoyed actual performance of these traditional activities.



Fig. 3 Mark Dankberg, CEO of ViaSat, Inc.



Fig. 4 Chris Hoerber, Senior Vice President of SS/L



Fig. 5 Yutaka Nagai, Senior Executive Vice President of SKY Perfect JSAT

Dr. Jack Holmes, Aerospace Corp., received the 2011 AIAA Aerospace Communications Award for contributions to the analysis, simulation and design of communication and spread spectrum systems on 30 November.

6. Conclusion

In order to promote satellite communication R&D and business in Asia and Pacific, this international conference will play an important role for satellite communication society since ICSSC will be held in Asia every four years. The next AIAA ICSSC-2012 will be held in Ottawa, Canada jointly with the 18th Ka and Broadband Communications, Navigation and Earth Observation Conference, which is an annual international conference organized mainly by European space agencies and organizations. For the detailed information, please visit the web site <http://www.kaconf.org/>.

IEICE-CS Conferences Calendar

Date	Conference Name	Location	Note
05 Nov. - 09 Nov. 2012	9th Asia-Pacific Symposium on Information and Telecommunication Technologies (APSITT2012)	Santiago and Valparaiso, Chile	Submission deadline: closed
05 Nov. - 09 Nov. 2012	12th International Conference on Telecommunications for Intelligent Transport Systems (ITST2012)	Taipei, Taiwan	Submission deadline: 31 May 2012
29 Oct. - 02 Nov. 2012	2012 International Symposium on Antennas and Propagation (ISAP2012)	Nagoya, Japan	Submission deadline: 27 Apr. 2012
15 Oct. - 17 Oct. 2012	The 18th Asia-Pacific Conference on Communications (APCC2012)	Jeju Island, Korea	Submission deadline: 1 May 2012
08 Oct. - 11 Oct. 2012	16th International Conference on Intelligence in Next Generation Networks (ICIN2012)	Berlin, Germany	Submission deadline: 9 Apr. 2012
18 Jun. - 21 Jun. 2012	The 11th International Workshop on Assurance in Distributed Systems and Networks (ADSN2012)	Macau, China	Submission deadline: closed
29 May - 31 May 2012	10th International Conference on Optical Internet (COIN2012)	Yokohama, Japan	Submission deadline: 12 Mar. 2012
24 May - 25 May 2012	The 4th Sarajevo Technology Forum 2012 (STF2012)	Sarajevo, Bosnia and Herzegovina	To be held soon
18 May - 19 May 2012	2012 Korea-Japan Electromagnetic Theory, Electromagnetic Compatibility, and Biological Effect Joint Conference (KJJC-2012)	Seoul, Korea	Submission deadline: 2 Mar. 2012
06 May – 09 May 2012	The 2012 IEEE 75th Vehicular Technology Conference (VTC2012-Spring)	Yokohama, Japan	To be held soon
05 Mar. - 06 Mar. 2012	World Telecommunications Congress 2012 (WTC2012)	Miyazaki, Japan	To be held soon
01 Feb. - 03 Feb. 2012	The 26th International Conference on Information Networking (ICOIN2012)	Bangkok, Thailand	Done
28 Nov. - 01 Dec. 2011	29th AIAA International Communications Satellite Systems Conference (AIAA ICSSC-2011)	Nara, Japan	Reported on this issue
25 Oct. - 28 Oct. 2011	2011 International Symposium on Antennas and Propagation (ISAP2011)	Jeju, Korea	Reported on this issue
04 Oct. – 07 Oct. 2011	15th International Conference on Convergence in Services, Media and Networks (ICIN2011)	Berlin, Germany	Reported on this issue
02 Oct. - 05 Oct. 2011	The 17th Asia-Pacific Conference on Communication (APCC2011)	Kota Kinabalu, Malaysia	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>



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.

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● **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)		

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Service coverage for overseas members	Admission charge	Online Version		Paper Version (optional)		
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					(In one society)	
One title	Two titles					
Member (overseas)	1,400	7,000	3,500 / 1society	6,000	4,000	10,000
Member (overseas) with OMDP*	1,000	5,000	3,000 / 1society	5,000		
Student member (overseas)	-	2,000	2,000 / 1society	6,000		
Student member (overseas) with OMDP*	-	1,000	1,500 / 1society	5,000		

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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.
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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
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IEICE Communications Society - GLOBAL NEWSLETTER Submission Guideline

First version in only Japanese: May 30, 2008

Second version in only Japanese: Feb. 13, 2009

Third version in only Japanese: Jul. 22, 2010

Forth version in English and Japanese: Mar. 8, 2011

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 Articles

This newsletter includes many articles such as messages from IEICE-CS President/Vice President, IEICE-CS activities, IEICE-CS sponsored conferences reports, essays, laboratory activity reports, technology reports, messages from overseas/foreign members, call for paper/participation, and etc.

1) Messages from President/Vice President

- An inaugural message from CS President is published once per year in June. That from CS Vice President is published properly.

2) IEICE-CS activities now

- IEICE General/Society Conference participation/reports
- Technical committee reports
- International activities on society

3) IEICE-CS Sponsored Conferences Report

- IEICE-CS sponsored/co-sponsored/technically cosponsored/cooperated conferences reports

- 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 Information

- Call for papers

- From editor's desk (*)

*: planned / written by IEICE-CS Directors, Planning and Members Activities

2. Major notes for contribution

Basically welcome IEICE-CS members and readers to contribute newsletters. IEICE-CS Directors, Planning and Members Activities can ask them to contribute newsletters as special topics. The content should be fruitful and profitable for IEICE-CS members, **NOT** for particular organization.

2.1 Newsletter format

Please use a sample format in English for your newsletter.

<http://www.ieice.org/xxx>

2.2 Number of pages

Two to four pages are preferable. One page is also acceptable, and 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

This signed statement must be received by the IEICE when your manuscript is first submitted to an IEICE publication. By signing this statement, the author(s) are agreeing to be bound by the IEICE Provisions on Copyright. 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

Main schedule (deadline)

Publication date	1 st , Mar.	1 st , Jun.	1 st , Sept.	1 st , Dec.
Call for newsletter	1 st Fri., Dec.	1 st Fri., Mar.	1 st Fri., Jun.	1 st Fri., Sept.
Contribution entry	4 th Fri., Dec.	4 th Fri., Mar.	4 th Fri., Jun.	4 th Fri., Sept.
Submission of Manuscript/Copyright	3 rd Fri., Jan.	3 rd Fri., Apr.	3 rd Fri., Jul.	3 rd 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 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 and COPYRIGHT TRANSFER

You can download formats from the Internet.

http://www.ieice.org/cs/pub/global_howto.html

You should send a manuscript [word file and pdf] and COPYRIGHT TRANSFER FORM [including signature, pdf] to IEICE-CS Directors, Planning and Members Activities by e-mail.

E-mail: cs-gnl@mail.ieice.org

If you cannot send IEICE-CS Directors COPYRIGHT TRANSFER by e-mail, you can send it to IEICE-CS office by facsimile or mail.

Name: IEICE-CS Office

Address: Kikai-Shinko-Kaikan Bldg., 103, 5-8, Shibakoen 3 chome, Minato-ku, Tokyo,
105-0011 Japan

Facsimile: +81-3-3433-6616, Phone: +81-3-3433-6692

Contact point: IEICE-CS Directors, Planning and Members Activities in charge of
IEICE CS - GLOBAL NEWSLETTER, cs-gnl@mail.ieice.org (End of document)

From Editor's Desk

● IEICE General Conference in Okayama

The IEICE general conference is approaching. The conference will be held at Okayama University from March 20 to March 23. Okayama's climate in this season is mild specific in the Inland Sea, which is very appropriate environment for the conference. You can also enjoy food such as seafood, fruits, noodles and so on. Okayama city has one of Three Great Gardens of Japan called "Kourakuen", which has its history of about 300 years. You can spend the whole day after the conference to enjoy the beauty and also get the knowledge of Edo period in Japan. We look forward to seeing you at the conference.

IEICE GLOBAL NEWSLETTER Editorial Staff

Editorial Staff of this issue

No special order is observed



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APCC 2012

<http://www.apcc2012.org>

The 18th Asia-Pacific Conference on Communications

“Green and Smart Communications for IT Innovation”

October 15-17, 2012

Ramada Plaza Jeju Hotel, Jeju Island, Korea

CALL FOR PAPERS

The 18th Asia-Pacific Conference on Communications (APCC 2012) will be held at Ramada Plaza Jeju Hotel in Jeju island, Korea, during October 15-17, 2012. Since 1993, APCC has been a technical forum for researchers and engineers to interact and disseminate information on the latest developments in advanced communication and information technologies. Prospective authors are invited to submit original technical papers for presentation at the conference and publication in the conference proceedings. Potential topics are solicited in, but not limited to the following topics:

- Ad hoc and sensor networks
- Antennas and propagations
- Broadband wireless access
- Cognitive radio and networks
- Communication protocol and architecture
- Communication theory
- Cooperative communication and relaying
- Future Internet and networks
- Green communication systems and network
- Information theory and channel coding
- Mobility management
- Multimedia communications
- Multiple antenna techniques
- Network and information security
- Network applications and services
- Optical networks and systems
- QoS and resource management
- Satellite and space communications
- Signal processing for communications
- Switching and routing
- Wireless and mobile networks
- Wireless communications

Submission Guidelines

Paper submission process will be managed by using EDAS: <http://edas.info/N12021>. Paper length should be six pages at maximum including figures, tables, references, and appendices. Please use the standard IEEE conference proceedings templates for Microsoft Word or LaTeX format on A4 size pages founded at <http://www.ieee.org/web/publications/pubservices/confpub/AuthorTools/conferenceTemplates.html>. Accepted papers will be published in the APCC 2012 Conference Proceedings and in IEEE Xplore, for which at least one author is required to register for the conference at the full rate.

Selected Journal Publication

Selected papers will be invited for publication in upcoming issue of JCN (Journal of Communications and Networks), which is a SCI-indexed international journal published by KICS, after a suitable peer-review and further revisions (<http://www.jcn.or.kr>).

Best Paper Awards

The APCC 2012 will present the best paper awards to the selected outstanding papers presented during the conference.

Organizer

Korea Information and Communications Society (KICS)

Technically Co-sponsored by

IEICE Communications Society, China Institute of Communications (CIC)

Important Dates

- Paper submission deadline: **May 1, 2012**
- Notification of acceptance: **June 30, 2012**
- Camera ready submission: **July 31, 2012**
- Tutorial proposals: **June 30, 2012**

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- Oh-Soon Shin (Soongsil University, osshin@ssu.ac.kr)

ITST 2012

Taipei, Taiwan

Nov. 5-8, 2012

International Conference on ITS Telecommunications

Call for Paper

Wireless communication for intelligent transportation systems (ITS) is a promising technology to improve safety and security for all transport modes, to reduce traffic congestion, to optimize the use of existing infrastructures (road, rail maritime, fluvial) and support information services in vehicles with the general purpose of reducing the impact of transport on the environment. The development of sustainable mobility is a key challenge for the development of urban areas. A new era of vehicular technology that includes vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) communication is already there in the public transport domain and this should be generalized. This era will be driven by both (pre-competitive) public-sector and private-sector funding. Safety-related applications are not only taken into consideration, but non-safety multimedia content providers are also becoming a new topic of research. Key players in the industry, such as automotive companies, public transport operators, railway industries and government agencies, are investing heavily in the advanced research and development of many ITS technologies and applications. This research effort primarily focuses on the system development and standardization of telematics. During recent ITS developments, transportation telematics techniques have exhibited much progress, e.g., interaction between vehicles and the infrastructure for delivering services such as road-side assistance, automatic crash notification, concierge assistance and vehicle condition reports. These progresses are also really important in the public transport domain (buses, metro, trains, tramways) for which V2V and V2I for safety and non safety applications are a key component for the exploitation but also for reducing energy consumption. A number of IEEE 802.11p-like equipment prototypes have been built, and several technical reports based on field trials have demonstrated the lack of cutting-edge techniques to improve system performance. Furthermore, all these applications require accurate and reliable positioning using GNSS solutions alone or enhanced with map-matching and sensors fusion. Technology and applications for ITS and telematics design are rapidly emerging, and there is a critical need to bring together professional researchers, intelligent engineers, academia, industry, standard committees, the private sector and the public sector to exchange new ideas. This conference aims to spur research progress by serving as a forum in which both academia and industry can share experiences and report original work regarding all aspects of vehicular communication, e.g., Vehicular Ad hoc Networks (VANETs), cooperative systems, information dissemination, road and rail safety, information and emergency services, etc. Our primary goal is to promote meaningful research in the cross-layered design of architectures, algorithms and applications for vehicular communication environments in all transport modes.

Track1: Smart Vehicle

- Video/Audio signal processing for driver-assistance systems
- In-vehicle communications/telematics
- Analog/Digital circuit design for in-car smart systems
- SoC architecture/platform for smart vehicle systems
- Green design techniques for ITS
- Security and privacy in vehicular networks
- Field operational tests and testbeds for smart vehicular
- Vehicle collision avoidance
- Sensors and actuators

Track2: Intelligent Transportation Systems (ITS)

- Data-collection, organization and dissemination methods
- New ITS/Telematics applications
- Ongoing ITS/Telematics activities

Track3: Telecommunications and Positioning

- V2V, V2I and V2X communications
- Network protocols including MAC, routing, addressing, multicast, TCP protocols and end-to-end quality of service, resource management, security and privacy
- Design with multiple wireless data links (802.11p, 802.11x, WiMAX, WiFi, cell phone, LTE-A, GPS)
- Mobility or handover technology
- System-level, board-level and chip-level electronics
- PHY issues: channel measurements, channel modeling, channel estimation, antenna arrangement, pilot arrangement, etc.
- Physical layer and antenna technologies for vehicular networks
- RF propagation models for vehicular networks
- Radio resource management for vehicular networks
- GPS, GALILEO and terrestrial solutions for accurate and reliable positioning of vehicles

Track4: Green Life Toward Blue Planet

- Field operational tests and testbeds for vehicular networks
- Assessment of impact of vehicular networks on transportation efficiency and safety
- Emission modeling and environmental impact assessment
- Regional requirements and their consequences
- Interference-Management and Spectrally-Efficient Technologies
- Resource-Efficient Networking Technology and Application Design
- Cross-Layer Design/Optimization and Green Transceiver Design
- Novel technologies to reduce human electromagnetic exposure and electromagnetic pollution

Important Notes

PDF format via <http://edas.info/newPaper.php?c=11573>
Author's guidelines are announced on conference web site
<http://www.itst2012.org>

Important Dates

- ▶ Manuscript Submission Due: May 31, 2012
- ▶ Final Acceptance notification: July 31, 2012
- ▶ Final Manuscript Due: August 31, 2012
- ▶ Early Registration: August 31, 2012

General Chair: Jia-Chin Lin jjachin@ieee.org

Contact: Chi-Sheng Lin info@nucomm.org



IEEE



IEEE COMMUNICATIONS SOCIETY



IET The Institution of Engineering and Technology



電子情報通信学会
通信ソサイエティ
IEICE Communications Society



TTIA
Taiwan Telematics Industry Association



Call for Papers



2012 INTERNATIONAL SYMPOSIUM ON ANTENNAS AND PROPAGATION

October 29-November 2, 2012, Nagoya, JAPAN



The 2012 International Symposium on Antennas and Propagation (ISAP2012) will be held at Nagoya Congress Center in Nagoya, Japan, from October 29 (Monday) through November 2 (Friday), 2012. This Symposium, the 17th ISAP, is sponsored and organized by the Communications Society of the Institute of Electronics, Information and Communication Engineers (IEICE), and is held in cooperation with the Antennas and Propagation Society of the Institute of Electrical and Electronics Engineers (IEEE/AP-S), the International Union of Radio Science (URSI), the Antennas and Propagation Network of the Institute of Engineering and Technology (IET), the European Association on Antennas and Propagation (EurAAP), the Korean Institute of Electromagnetic Engineering and Science (KIEES), the China Institute of Communications (CIC), and the Electrical Engineering/Electronics, Computer, Communications and Information Technology Association of Thailand (ECTI). The Antennas Society of the Chinese Institute of Electronics (CIE) is under discussion.

OBJECTIVE

ISAP2012 is intended to provide an international forum for the exchange of information on the progress of research and development in antennas, propagation, electromagnetic wave theory, and related fields as shown in the SCOPE. It is also an important objective of this meeting to promote mutual interaction among participants.

SCOPE

This symposium will treat a wide range of subjects on antennas, propagation and electromagnetic wave theory as suggested below. Papers concerned with other aspects of these subjects will also be considered. In addition, special topics treating emerging technologies heralding a new era in wireless communications and applications are invited for consideration.

A. Antennas

- A1. Small Antennas
- A2. Mobile and Vehicular Antennas
- A3. Broadband and Multi-frequency Antennas
- A4. Millimeter- and Terahertz-Wave Antennas
- A5. Antenna Theory and Design
- A6. Antenna Measurements
- A7. Antenna Manufacturing Techniques

B. Propagation

- B1. Mobile and Indoor Propagation
- B2. Space-Time Channel Characterization
- B3. DOA Estimation
- B4. Remote Sensing
- B5. SAR Polarimetry and Interferometry
- B6. Terrestrial and Earth-Space Propagation
- B7. Ionospheric Propagation

C. Electromagnetic Wave Theory

- C1. Computational Electromagnetics
- C2. Analysis for Multi-scale Problems
- C3. Inverse Problems
- C4. Random Media and Rough Surfaces
- C5. Scattering and Diffraction
- C6. EBG and Metamaterials
- C7. New EM Modeling

D. AP-related Topics

- D1. Wireless Power Transmission Technologies
- D2. Antenna and Propagation Technologies for Cognitive Wireless Networks
- D3. MIMO and Cooperative Communication Technologies
- D4. Body-Centric Wireless Communication
- D5. Medical Applications and Biological Effects
- D6. RFID and Applications
- D7. EMC/EMI Technologies

ISAP2012 Web Page : <http://www.isap12.org>

PREPARATION OF PAPERS

Original papers are solicited that have not been presented previously and that describe new contributions in the area suggested in the SCOPE. Each author is requested to prepare a 4-page camera-ready paper written in English, including all text, references, figures and photographs. The authors are requested to refer to the ISAP2012 Web page (<http://www.isap12.org/>) for the detailed paper preparation instructions and the IEICE Copyright Transfer Form. The Proceedings will be available in CD-ROM format.

SUBMISSION OF PAPERS

Authors are requested to send their papers in IEEE Xplore-compliant PDF format by electronic method. The detailed instructions of the electronic Web-based paper submission will be provided on the ISAP2012 Web page. The deadline for the electronic paper submission is April 27, 2012. Presented papers of ISAP2012 will be included in IEEE Xplore.

WORKSHOP

Several workshops are scheduled to be held on October 29 (Monday), 2012.

EXHIBITION

Spaces for demonstration of software, books and products are also available with extra charge.

IEICE TRANS. SPECIAL SECTION

The Special Section on ISAP2012 will be planned in the IEICE Transactions on Communications. The detail information will be provided at the ISAP2012 Web page.

AWARDS

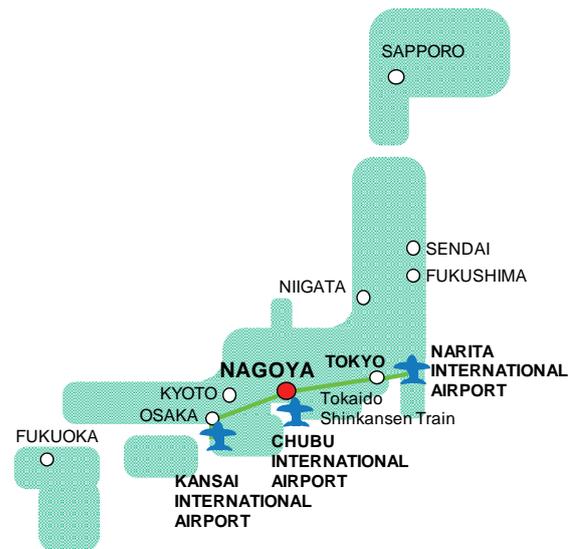
Several outstanding papers will be awarded for ISAP2012 Paper Awards. ISAP2012 also hosts Student Paper Contest in order to foster activities of students toward highly qualified researchers.

YOUNG SCIENTIST TRAVEL GRANT

Young Scientist Travel Grant (YSTG) will be awarded by ISAP2012 to several young overseas speakers who need financial support to present their papers. The applicants must be less than 35 years old as of October 29, 2012. The Symposium Steering Committee will select the winners and provide a part of traveling and staying expenses and registration fee. The grant is provided to the winners at the symposium site during the symposium period. The YSTG Application Form will be able to be downloaded from the ISAP2012 Web page.

VENUE

Nagoya, with a population of 2.2 million, is situated at the central Japan and good transportation from Tokyo, Osaka, Kyoto and all around in Japan. It is a city with strong cultural, historical and industrial identity. Nagoya's history began with Nagoya Castle, built in 1612. Since then, it encouraged the growth of cultural arts. Many of Japan's world-renowned high-tech industries; those of automobiles, aviation, machine tools, fine ceramics and industrial robots, are based in and around Nagoya. Yet, what really sets Nagoya apart from other convention cities is our blend of country-style warmth and big city feeling atmosphere.



ISAP ARCHIVES

ISAP Archives currently opens as a trial service. You can search and read the conference papers from the ISAP1971 to 2010 at the ISAP Archives Web page (<http://ap-s.ei.tuat.ac.jp/isapx/>).

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TIME TABLE

Deadline for paper submission:	April 27, 2012
Notification of accepted papers:	June 29, 2012
Deadline for advance registration:	August 31, 2012

FURTHER INFORMATION

Please have a contact to the following ISAP2012 Web page

<http://www.isap12.org>