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Inauguration Address: Academic Flexibility and Social Responsibility

Kazuo Hagimoto
President, IEICE Communications Society



First, I wish to express my deepest sympathy to everyone affected by Great East Japan Earthquake.

As president of the IEICE Communications Society from May, I wish to devote my energy to make my term a fruitful year for each member of the society. The activities of the Communications Society make up a pillar of the Institute of Electronics, Information and Communication Engineers (IEICE). At the same time, these activities have contributed both academically and industrially to the further development of the communication infrastructure that is essential for daily life. Through the society, discussions about a variety of possibilities are fostered, consensus is created, and the efforts of members in ushering in high-value technologies are recognized. The Communications Society is recognized as a highly active society by Asia as well as the rest of the world.

The critical role that a communication infrastructure plays and the challenges in which it is involved, not just technologically but also socially, is once again on display as a result of the great East Japan earthquake in March. The Communications Society has a major role to play by engaging the challenges directly and contributing our collective wisdom toward their resolution. Looking back on the last several years, there has been a greater frequency of disasters wrought by earthquakes and tsunamis in the Pacific Rim region. I suppose that there are many people who cannot help but feel powerless before awesome power of nature, even as different countries undergo recovery and attempt to devise preventive measures. Of course, not only does communication infrastructure provide us both daily convenience and economic efficiency, it has worked to be robust for providing continuous services during major disasters. Along with pursuing various possibilities, exploiting technologies that form the backbone of actual societies, and being active in major industries, the Communications Society is playing a role through its activities in supporting the creation of an information-oriented society. The information-oriented society is developing rapidly through networks that transcend distance, time, and even languages and cultures. The development is taking place in an intellectual field in which knowledge and records from the past are passed on to the future. We are developing an infrastructure in which society and individuals are managed, used, and passed on as “vital things.” When managing such “vital things,” convenience and reliability are trade-offs in some cases. While the risk of losing these “vital things” becomes more diverse, I

believe that the era of cloud computing can clearly provide a social infrastructure that is more resistant than conventional infrastructures against disasters. The cloud can provide frameworks for efficiently and reliably managing personal and public information needed for a mature information society. Therefore, I believe that the Communications Society’s activities should proceed along a shared foundation of flexibility and a sense of responsibility so that a variety of ideas and efforts can be gathered to engage and solve national problems, such as the energy problem and catastrophes. Such efforts are propositions that can be shared by all advanced countries, including Japan. I believe that activities in this area will improve not only the activities of the Communications Society, but also the activities of Japan and the role of Japan in the information age.

The data communication technologies have been supported by the progress in the physical layer, which includes wireless technologies and optical fibers. If you think about it, these technologies that now utilize the Ethernet and IP packets, as well as Web technologies have fostered the development of an infrastructure that can distribute and share contents such as TV broadcasts and copyrighted works while protecting the copyright of these contents. Japan has built a rich broadband environment that stands at the forefront of the world. In the area of input/output technologies, it has also developed cutting-edge device technologies, such as display systems, for exploiting this broadband environment. Meanwhile, in terms of creating cloud computing architectures that provide services exploiting the use of data in the Internet, such as Web search, Japan lags behind the U.S. when it comes to the total system challenge of creating the cloud, which offers overwhelming convenience while audaciously cutting into existing frameworks. In this cloud framework, supported by people’s curiosity and a sense of unity, a great wealth of contents is being developed that allow them to enjoy social networks by generating, transmitting, and sharing information through the Internet.

As we turn our eye to social activities, we find that global warming and the scarcity of resources such as fossil fuel – problems that accompany the growth in human population – have become international issues. It is critical that the activities of the Communications Society also respond to such changes in the social environment with flexibility and a sense of responsibility. Establishing both a convenient and

enjoyable social environment and perspective that protects the things vital to individuals and society will lead to a true information society. I cannot help but think that the unprecedented disaster we currently face, which has even resulted in the breakdown of the nuclear reactors in Fukushima, is injecting a profound sense of purpose into our activities. As we have been advocating, it is essential that we consider environmentally-friendly energy resources and shift to a social infrastructure that uses energy effectively in order to bring about an Earth-friendly green society. Despite this goal, what makes concrete measures hard to implement is the convenience sought by consumers. From this perspective, it is critical that we work to transform the crisis that we currently face in Japan into a blessing. We must concentrate our wisdom, discuss directions and technological challenges, and propose solutions as an academic society.

The source of the Communications Society's activities is spontaneous freedom, such as curiosity and the ability to dream. We dream of allowing people who are even far away to speak anywhere, anytime. When that dream becomes a near-reality, we will be able to make progress beyond what we imagine with the creativity of many people. However, when what have been convenient to use suddenly become unavailable, a major barrier is created. The East Japan earthquake stopped trains in Tokyo, even though the city is far away from the disaster areas. Telephone service was interrupted, creating inconvenience and increasing people's anxiety. Even so, learning from the experience of the Kobe earthquake maintained the reliability of the communication infrastructure to the extent that allowed people to use e-mail and voice mailboxes.

IEICE and the Communications Society occasionally publish feature articles and special issues concerning the daily convenience of communications and their protection during disasters and emergencies. This disaster, like previous disasters, has shown that we could not make a completely satisfactory solution. I believe that it is critical to be prepared and be responsible for maintaining a minimal level of communication when disaster strikes. At the same time, it is critical to have a flexibility that can incorporate voluntary supplemental methods. We have been calling for collaboration among industry, academia, and government for a long time. In the midst of competition to claim hegemony, which is the worldwide trend, engineering that only debates academic issues is a lonely enterprise. Daily convenient tools are progressing in reality from the previous "made-in-Japan" era to an era in which knowledge from around the world are gathered into products, as represented by the PC, which makes use of de facto standard and mass-produced LSI chips and software. The Communications Society no longer has direct connections to such fields and products. I believe that the expansion of this trend is one reason behind drop in members from industry.

The path we must take is to create fundamentally new ideas, and steadily create communities that form majorities to support these new ideas. After the Second World War, Japan developed as a country to supplement America's economic activities. The moment that parity in part between the two countries could be glimpsed, Japan was encouraged to become independent in globalization, a two-edged sword, and in the formation of an information society. In today's world, in which developments by academia and industry play a vital role in forming worldwide consensus on topics such as standardization, I want to use my position to continue to shape the Communications Society as a place where all members can mobilize their abilities, by providing truly valuable services through our activities, which feature a close partnership between industry and academia as one of their characteristics, so that a match between the pursuit of technology and social activities can continue.

Recently, I participated in the 50th anniversary celebration of the Technical Committee on Communication Systems. Along with honoring the visions of our predecessors, we stimulated one another through a great deal of discussion of the next 50 years. I want to devote my energy to forming and extending the social infrastructure that solves the issues faced by civilized societies including Japan, based on a philosophy of flexible yet tenacious adaptability, and enjoy the fruits of this endeavor with members of the society.

Development of Phased Array Antenna Systems for Satellite Communications in Japan

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1. Introduction

The authors review research and development on phased array antennas (PAAs) for satellite communication systems in Japan in over past two decades [1]. In Sect. 2, this paper denotes the historical overview of the PAAs for satellite use. Also, described the PAA for the mobile satellite communication terminals in Sect. 3.

2. PAA for satellite use

Communications Research Laboratory (CRL) and National Space Development Agency of Japan (NASDA) have developed the multibeam phased array antenna for the S-band Intersatellite Communications (SIC) on the Engineering Test Satellite-VI (ETS-VI) [2]. Figure 1 shows the SIC antenna. The SIC antenna has 19 element antennas, each of which is 7-element microstrip sub-array antenna. All element antennas are used for receive mode and 16 of them are used for the transmit mode. In receive mode, the return link signal received by each element is divided into 2 signals in order to obtain 2 independent beams using independent 4-bit digital phase shifters. Transmit mode has a single pencil beam. In the case of the SIC antenna, Diplexers (DIP), High power amplifiers (HPA), Low noise amplifiers (LNA) and beamforming networks (BFN) are placed inside the satellite body for avoiding thermal effects of the Sun.

Figure 2 shows a partial model APAA of the Ka-band (18/28GHz) scanning spot beam antenna (SSBA)

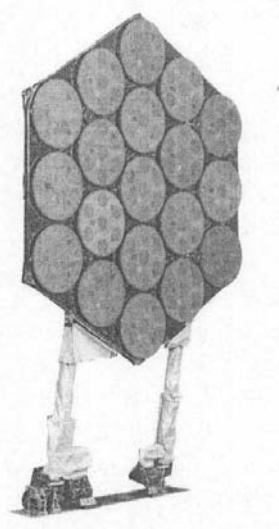
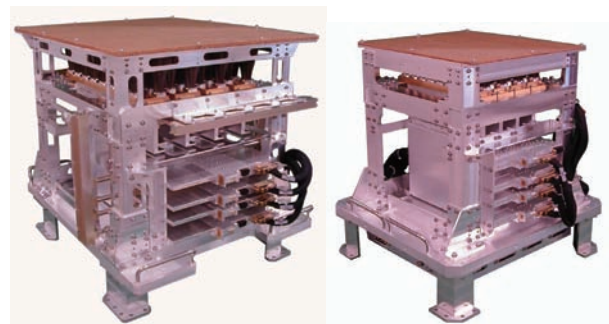


Fig. 1 SIC antenna

supposed for the experimental high data rate (Gigabit) communication satellite [3]. The partial model consists of different transmit (Tx) and receive (Rx) APAAAs. Each antenna uses a meanderline polarizer and 64 pyramidal horn element antennas and realizes circularly polarized scanning spot beams. Each transmit and receive element has a SSPA or a LNA and 4 independent 4-bit digital phase shifters in order to obtain 4 independent beams, respectively.

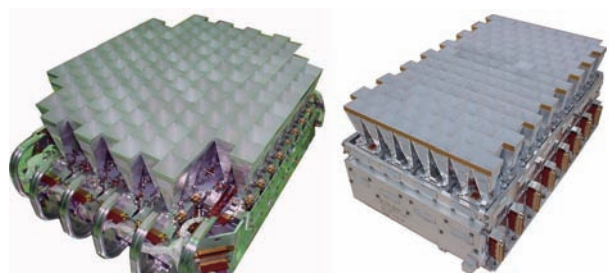
The SSBA for the Wideband InterNetworking Engineering Test and Demonstration Satellite “Kizuna (WINDS)” has been designed based on development results of this partial model [4], [5]. Figure 3 shows the Tx and Rx APAAAs for the WINDS SSBA. This SSBA can operate 2 independent beams using 128 antenna elements. Operating frequencies for the Tx and Rx antenna are 18 and 28GHz, respectively.

The primary feed array antenna for the 13m-diameter S-band deployable reflector antenna for the Engineering Test Satellite-VIII (ETS-VIII) is also one of the satellite-borne APAA [6], [7].



(a) Tx antenna (b) Rx antenna

Fig. 2 Ka-band partial model APAA for Gigabit satellite



(a) Tx antenna (b) Rx antenna

Fig. 3 Ka-band SSBA for Kizuna (WINDS)

3. PAA for Satellite Communication Terminals

Since the middle of 1970's, the research and development activities on satellite communications for mobiles such as ships, aircraft and land mobiles have been continued in many countries and organizations. Typical programs are the MSAT in USA and Canada, AUSSAT in Australia and INMARSAT system [8]. In Japan, L-band mobile satellite communication experiments using the Engineering Test Satellite-V "Kiku-5 (ETS-V)" has been planned and several types of terminal APAA's has been developed for this experiment program [9].

Kokusai Denshin Denwa (KDD) has developed two types of L-band experiment PAAs supposed for the aeronautical satellite communication, respectively [10], [11]. The first one shown in Fig. 4 is a 16-element array antenna using cross slot element antenna which covers transmit and receive frequency band [10]. The other one shown in Fig. 5 is a 9-element array antenna using stacked microstrip element antenna which consists of a transmit circular patch antenna and a receive ring patch antenna [11]. CRL has developed another L-band top-mount airborne PAA for the aeronautical satellite communication experiments using ETS-V as shown in Fig. 6 [12]. This antenna consists of two sides of arrays, and each array has 2×8 elements. The beam is steered only in azimuth directions within ± 60 degrees by controlling eight 4-bit digital phase shifters. The volume is $760(L) \times 320(W) \times 180(H)$ mm and weight is 18kg.

Several types of PAAs have been developed for land

mobile satellite communication terminals. Figures 7 and 8 show two types of L-band 19-element PAAs for land mobile use, respectively [13], [14]. The first one shown in Fig. 6 consists of 19 orthogonal two-point-probe-fed circular patch antenna elements with parasitic elements, 18 3-bit phase shifters and a 19:1 power divider. BT resin substrate ($\epsilon_r=3.6$) is used for the patch antennas, the parasitic elements and a power divider [13]. On the other hand, The other one shown in Fig. 8 uses slot-coupled microstrip patch antenna elements and this slot coupled patch and the parasitic element are fabricated by very thin film PET substrate ($\epsilon_r=3.2$) considering simple configuration and cost reduction. Also, this antenna uses a simple configuration of BFN using a lot of 3dB dividers and 3-bit phase shifters with frequency dependent delay characteristics in order to avoid the beam tilt between transmit and receive frequencies [14].

Conformal array antennas have also been researched for the mobile satellite communications in order to obtain wide angle coverage area. Figure 9 shows a conformal array antenna whose element antennas are placed on the hemisphere or partial sphere substrate [15]. In these array antennas, the digital beam forming

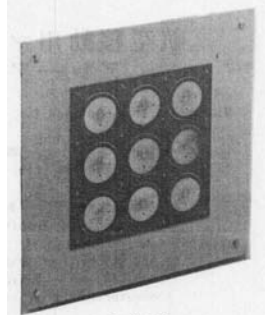
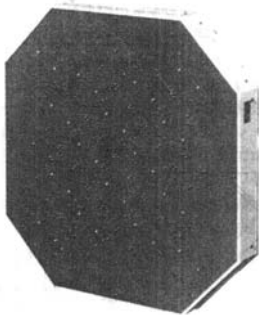


Fig. 4 L-band cross slot array antenna

Fig. 5 L-band microstrip array antenna

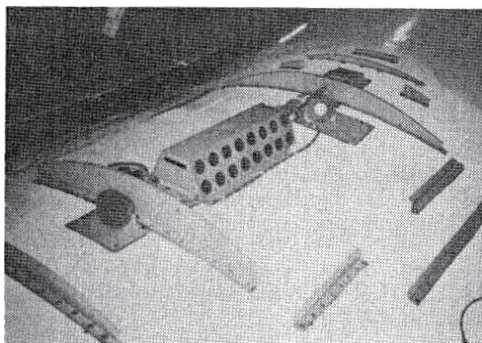


Fig. 6 L-band aeronautical satellite communication PAA



Fig. 7 First type of L-band land mobile PAA

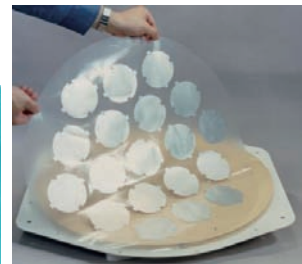


Fig. 8 Second type of L-band land mobile PAA

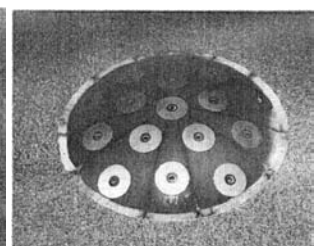
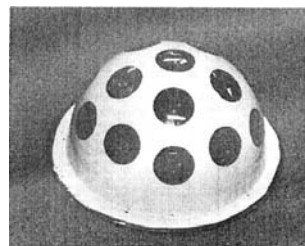


Fig. 9 Conformal array antennas for L-band mobile satellite communications



Fig. 10 S-band aeronautical satellite communication PAA

(DBF) technique is applied to obtain transmit and receive beams instead of using RF phase shifters [16].

After the mobile satellite communication experiments, the aeronautical terminal PAA has been applied for the commercial use. The first commercial aeronautical PAA has been fabricated based on the PAA shown in Fig. 6 and this antenna is used for L-band INMARSAT aeronautical SATCOM system. On the other hand, a S-band top-mount aeronautical terminal PAA has been developed for the Japanese domestic satellite telephone system using N-STAR [17]. Figure 10 shows configuration of this PAA. This antenna consists of a transmit array and a receive array and both array use 32 helical antenna elements. The receive array is the first active phased array antenna (APAA) for the terminal use in order to achieve the desired G/T value by using as small number of element antennas as possible.

The PAA systems have been continued to develop in higher frequency region. Figure 11 shows the Ku-band (12/14GHz) mobile PAA for the Satellite News Gathering (SNG) system developed by NHK [18]. It is necessary to reduce sidelobes along the GEO satellite arc and to satisfy Recommendation ITU-R S.580 for SNG use. This antenna clears up this problem of which diagonal plane corresponds with the GEO satellite arc.

Figure 12 shows the Ku-band experimental helicopter satellite communication system for transmission of disaster and emergency information developed by National Institute of Information and Communications Technology (NICT) [19]. This system operates synchronized transmission from the helicopter with the timing of the helicopter blade's interception of the radio wave. Figure 13 denotes the Tx and Rx APAAs, which have 536 and 642 antenna elements, respectively. Four antenna elements and four RF modules are integrated into one module package and installed in the APAA flame. It adopts an exhaust heat exchanger using blade's air flow. These APAAs also have electrical polarization tracking systems in order to satisfy the requirement of cross polarization discrimination more than 17dB in Recommendation

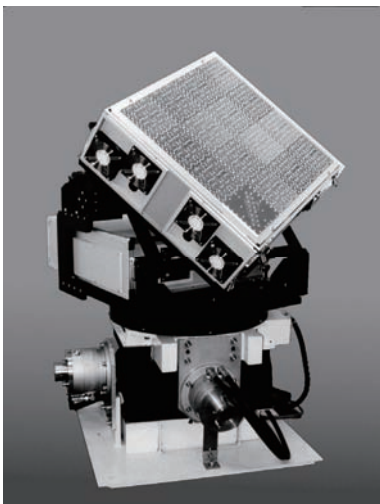


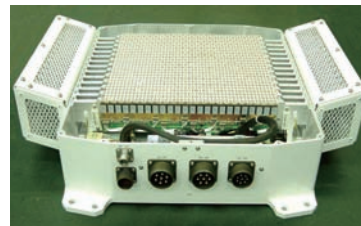
Fig. 11 Ku-band SNG PAA



Fig. 12 Ku-band experiment helicopter-satellite communication system



(a) Tx antenna



(b) Rx antenna

Fig. 13 Ku-band Tx and Rx APAAs for helicopter satellite communication system

ITU-R S.728-1.

Figures 14 and 15 show the Ka-band (20/30GHz) land mobile satellite communication experiment system and a DBF array antenna for this system, respectively [20]. The Rx antenna (18.9-19.5GHz) and the Tx antenna (28.7-29.2GHz) consist of 64 antenna elements. Each antenna elements is a rectangular waveguide aperture arranged on the regular triangular lattice. Circular polarization is obtained using a meander-line polarizer. The Rx digital block uses parallel DSP/FPGA architecture and synthesizes not only the main beam but also the null beam by using the beam-space maximum ratio combining (BS-MRC) algorithm or the beam-space constant modulus algorithm (BS-CMA). The Tx digital block determines the Tx antenna aperture distribution same as that of the Rx antenna.

4. Conclusions

The authors reviewed the research and development on the PAA for satellite communication use in Japan.

We hope further growth and expansion of phased array technologies not only for satellite communication use but also for other various applications.

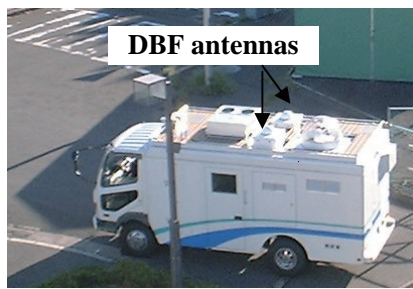
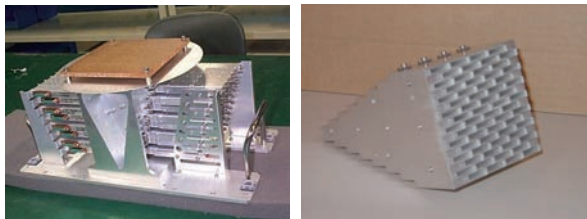


Fig. 14 Ka-band land mobile satellite communication system



(a) Rx DBF antenna (b) Rx antenna elements

Fig. 15 Ka-band DBF array antenna

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Online Publication for Information Delivery on Satellite Communication R&D

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1. Introduction

After making the switch from print publishing to digital publishing, a web magazine “Space Japan Review” has been published on URL of <http://satcom.jp/> from May 2001 Issue No. 16 by the Japan Forum on Satellite Communications (JFSC), which is a sub-committee of the Communications Systems Technical Committee (CMSTC) of the American Institute of Aeronautics and Astronautics (AIAA). The Technical Committee on Satellite Communications (SAT) of IEICE Communications Society holds Joint Conference on Satellite Communications (JC-SAT) in cooperation of AIAA CMSTC and JFSC every year, and vice versa. This paper will introduce the on-line magazine for information delivery on satellite communication R&D as information for readers of Global Newsletter.

2. Space Japan Review

After successful 17th AIAA International Communications Satellite Systems Conference (ICSSC) was held firstly in Japan on 23-27 February 1998, JFSC was es-

tablished to continue focused and sustained activities, promote workshops and exhibits, and publish the magazine “Space Japan Review” bi-monthly both in Japanese and English. The establishment of JFSC was approved by the Communication Society, IEICE. The first issue was published in print edition in February 1999. Next, we will introduce several corners and content of the magazine.

3. Executive Comment and Interview with CEO

Articles on a corner named “Executive Comment” are written by specialists and professionals of widely telecommunications as well as satellite communications. Chairman of Japan’s Space Activities Commission, government directors, presidents of national research institutes and university professors have provided ongoing and forth-coming space policy review and perspective on various technological challenges.

In “Interview with CEO”, CEOs of satellite communication and broadcasting enterprises in the world were interviewed: Alcatel, Arianespace, ASBC, AsiaSat, Astrium, Boeing Satellite Systems, B-SAT, COMDEV, ILS, Inmarsat, JSAT, MBCO, Mitsubishi, MSS, NEC, NEC/Toshiba, Orbital, SCC, SLL, ViaSat and XTAR LCC. Due to intense M&A of these enterprises, interesting perspective was obtained for different strategy of satellite business.

4. Special Reports and Selected Papers

“Special Reports” on new satellite communication related technologies, services and business reveals experimental satellites such as WINDS, ETS-VIII, QZSS and a series of small satellites, updated commercial services like Inmarsat’s BGAN, Connexion by Boeing and MobaHo!, and national projects like AsiaBroadband, J-ALERT, ubiquitous Space-Net program and Stratospheric Platform. Some projects and services were already terminated.

Space debris, Ka and broadband satcom, IP-based satcom, satellite-based Body Area Network (BAN), satcom using Ultra Wideband (UWB) signals, wireless revolution, advanced on-board processors, multicarrier/multi-rate modems, JAXA’s i-Space, Millennium Village Project and optical satellite communications were reviewed as “Selected Papers”. These articles are not too technical but are legible for general readers.



Fig. 1 Recent issue of Space Japan Review, No. 67 April / May 2010, on the web site of <http://satcom.jp/> or <http://satcom.jp/English/>

5. Space Japan Club and Satellite Communication and I

Space and satellite related activities are owed to a lot of people's discontinuing efforts. These corners have introduced more than 50 persons who sweat for developing satellite communications technologies, services and business, including persons in various fields of manufactures, vendors, operators, service providers, research institutes, universities, and NPOs. These articles will engage readers interested in humanity expressed behind their experiences, actions and behaviors.

6. Space Japan Opinions

In 2008 the Space Basic Law was concluded in Japan, the importance of satellite communication technologies for national security and how to lead space R&D have been discussed. At the Editing Committee Meeting, we often talked about proposals to progress Japanese space R&D, demands and problems that should be solved or improved. Topics concerning the ideal situation of space-related R&D process and utilizations, the evolution of commercial communications satellite industries, US space policy and strategy, manned space development, and strategic industries and economic security as well as national security issues. Active opinions such as criticism and/or agreement are expected from readers.

7. Others

Space Japan Review offers information on various other aspects related to satellite communications. The Conference Report describes technical presentations on advanced satellite communication technologies appeared in conferences such as JC-SAT, which is organized by IEICE SAT and Korea Society of Space Technology, ICSANE (former WSANE) organized by IEICE SANE, AIAA ICSSC, IAC, ISTS, JUSTSAP, MILCOM, PTC, etc. The Capital Products and Review informs new products for communications satellites together with editor's review. The Education Corner introduces space-related activities in universities. The Satellite Commentary provides brief histories of satellite communications and comments on recent situations. These various corners of Space Japan Review will give you a whole perspective on satellite communication technologies, services and business.

8. Conclusion

It is difficult to discuss satellite communication R&D only in terms of technologies without commercial and practical usages. Information delivery and exchange concerning ideas of enterprise and government on market trends and political demands in practical systems will be important. The magazine has been published to play such roles.



Fig. 2 First issue of Space Japan Review, published in February 1999 as print edition

At first the print edition of the magazine was delivered to subscribers by postal mail with an annual subscription fee. For periodicals it is necessary to meet strictly the deadline of submission to a printing office. After shifting to web publishing, though it was still few in 2001, we found a lot of advantages such as no printing cost, no time-consuming printing and editing process, no postage cost, more flexible deadline of manuscript submissions, and easy retrieval and archives of issues. It became possible to update events and articles in a timelier manner with audio or video, and know how many readers have accessed it using a website hit counter. The subscription fee is not necessary to be collected due to all voluntary based publications.

Space Japan Review has been published both in Japanese and English. We sometimes feel difficulty in translation from 'native' Japanese to English. As a result, the number of English articles is still less than Japanese articles. Now, the editors try to use the Language Grid Toolbox, which is an open source multilingual communication tool developed by the National Institute of Information and Communications Technology. I am, as the chief editor of Space Japan Review, looking forward to publishing the multi-language on-line magazine in the future.

QoS Control in Networked Multimedia

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Nagoya Institute of Technology



1. Introduction

Networked multimedia applications such as multimedia conferencing, distance learning, collaborative work in networked virtual environments, and networked games attract a great deal of attention. In such applications, haptic, olfactory, and gustatory media as well as computer data, voice, and video will be handled together. In our research, we focus on audio, visual, haptic, and olfactory media communications.

When we transmit these types of media over QoS (Quality of Service) non-guaranteed networks like the Internet, QoS of the media may be degraded seriously owing to network delay, delay jitter, and packet loss. To achieve high quality of networked multimedia applications by avoiding the deterioration, we need to carry out QoS control.

As QoS control, we deal with media synchronization control, causality control, consistency control, traffic control, dead-reckoning, adaptive control of reaction force, error control, CPU load control, adaptive QoS control, and so on. Owing to limited space, we here explain only media synchronization control, causality control, dead-reckoning, and adaptive control of reaction force.

2. Media synchronization control

Media synchronization control is grouped into three types: Intra-stream, inter-stream, and group (or inter-destination) synchronization control [1], [2].

(1) Intra-stream synchronization control

Intra-stream synchronization control is required for preservation of the timing relation between *media units* (MUs), each of which is an information unit for media synchronization, such as video frames in a single media stream. The input intervals between MUs are disturbed owing to network delay jitter. The intra-stream synchronization control recovers the intervals when the destination outputs the MUs as shown in Fig. 1.

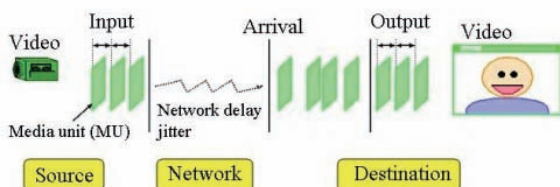


Fig. 1 Intra-stream synchronization control

(2) Inter-stream synchronization control

Inter-stream synchronization control is required for keeping the temporal relationship among media

streams. Lip-sync is a representative of the inter-stream synchronization, and it means the synchronization between spoken voice and the movement of the speaker's lips. Media streams fall into a *master* stream and *slave* streams. The slave streams are synchronized with the master stream as shown in Fig. 2. In lip-sync, the voice is generally selected as the master stream. This is because voice is more sensitive to intra-stream synchronization error than video.

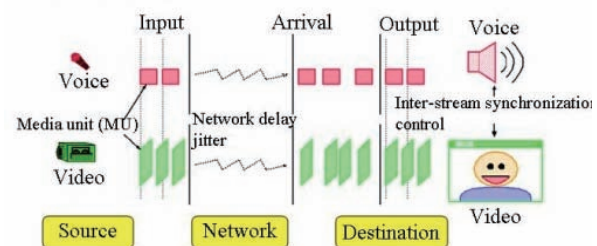


Fig. 2 Inter-stream synchronization control

(3) Group synchronization control

Group synchronization control is necessary to output each MU simultaneously at different destinations in multicast communications as shown in Fig. 3. When the group synchronization is disturbed, the fairness among multiple users may be damaged. For group synchronization control, we proposed the *master-slave destination* scheme [2], the *synchronization maestro* scheme [3], and the *distributed control* scheme [4].

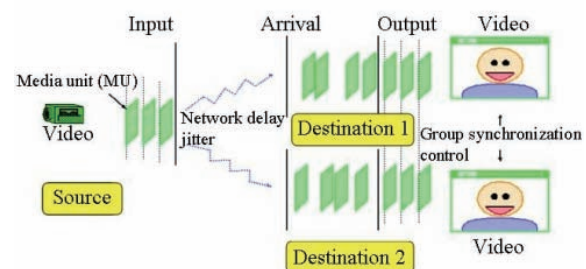


Fig. 3 Group synchronization control

A number of media synchronization algorithms have been proposed to meet diverse requirements. We group media synchronization control techniques used in the algorithms into the following four categories (excluding group synchronization control) [5]:

(a) Basic control

The basic control techniques are needed in almost all the algorithms, and they are indispensable to preserve the temporal relationships among media streams (e.g., attachment of synchronization information to MUs and buffering of MUs).

(b) Preventive control

The preventive control techniques are required to try to avoid asynchrony (i.e., out of synchronization). Thus, the techniques are used before asynchrony occurs (e.g., transmission of MUs according to synchronization information and change of buffering time with network delay estimation).

(c) Reactive control

The reactive control techniques are employed to recover from asynchrony after it has occurred (e.g., skipping and pausing MUs, shortening and extension of MU output duration, virtual-time contraction and expansion, and master-slave switching).

(d) Common control

The common control techniques can be used as both preventive and reactive control ones (e.g., adjustment of input/output rate and interpolation of data).

For example, the virtual-time rendering (VTR) media synchronization algorithm [6], which we previously proposed, employs the virtual-time expansion and contraction, the shortening and extension of MU output duration, skipping and pausing of MUs, the attachment of synchronization information (timestamps) to MUs, the buffering of MUs, and so on.

3. Causality control

Causality represents temporal order relationships. The Δ -causality control [7] is a typical example of causality control [8]. In the control, each MU has a time limit, which is equal to the generation time of the MU plus Δ seconds, for preservation of the real-time property. If the MU is received after the time limit, it is discarded since it is considered useless. Otherwise, it is assumed to be output at the time limit. We show an example of MU output timing under the Δ -causality control in Fig. 4, where we plot the generation timing of MUs at terminals 1 and 2, and the arrival timing and output timing of MUs at the server.

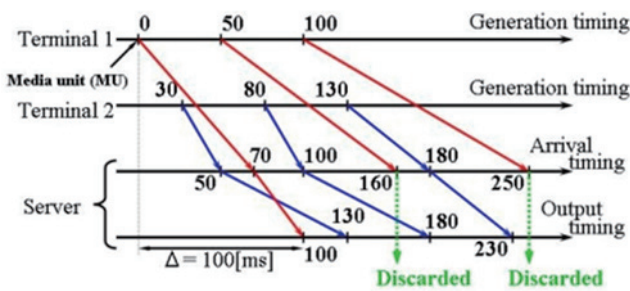


Fig. 4 Δ -causality control

In the figure, the value of Δ is set to 100 ms. Terminal 1 generates three MUs at 0, 50, and 100 ms. These MUs are received at the server at 70, 160, and 250 ms, respectively. The last two MUs arrive late. Thus, the two MUs are discarded. On the other hand, three MUs generated at terminal 2 arrive earlier than their time limits. Therefore, these MUs are output at their time limits. As a result, we can preserve the causality among the surviving MUs.

We also proposed the *adaptive Δ -causality control*, which dynamically change the value of Δ according to the network delay [9].

4. Dead-reckoning

For traffic control of positional information of avatars, objects, and fighters, we can use the function of dead-reckoning [10]. Especially, since a haptic MU including the positional information of objects is input/output every millisecond (i.e., at a rate of 1 kHz), the function is very important. In dead-reckoning, the position of each object is predicted. There exist several prediction methods. For simplicity, we show an example in the first-order prediction in Fig. 5.

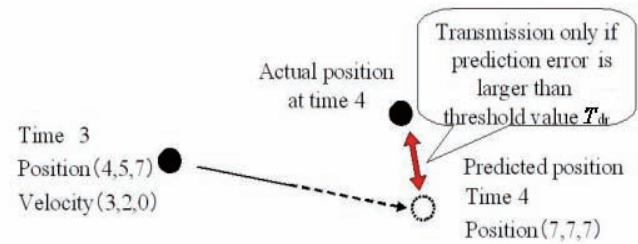


Fig. 5 First-order prediction in dead-reckoning

In Fig. 5, we predict the position of a flying ball. In the first-order prediction, we calculate the predicted position by using the position included in the last received (or transmitted) MU and the velocity calculated with the positional information included in the latest two transmitted (or received) MUs. That is, (the predicted position) = (the last position) + (the velocity) x (the elapsed time). Then, we compare the predicted position with the actual position. If the difference between the predicted position and the actual position (i.e., the prediction error) is larger than a threshold value (T_{dr}), the information on the actual position is transmitted as an MU. Then, the convergence technique is used. Otherwise, the information is not transmitted at that time. In the convergence technique, when an MU is received (or transmitted), we correct the position over K times (K is larger than or equal to 1) in order to correct the position gradually. This is because if we correct the position at a time, the output quality may deteriorate seriously. We show an example in the convergence in Fig. 6. In this figure, when the prediction error becomes larger than the threshold value T_{dr} , the actual position is transmitted. Then, the convergence is carried out at several times. At the 7th MU, the ball is output at the predicted position.

We also proposed the *adaptive Δ -causality control with adaptive dead-reckoning*, which dynamically changes the threshold value (T_{dr}) according to the network delay [9].

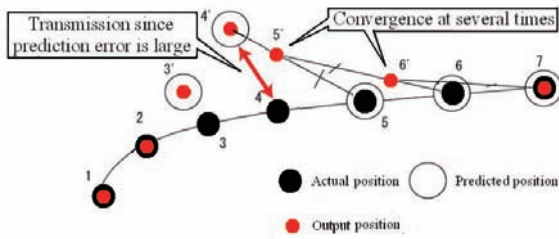


Fig. 6 Convergence in dead-reckoning

5. Adaptive control of reaction force

Adaptive control of reaction force dynamically changes the elastic modulus, which is used for calculation of the reaction force applied to the user, according to the network delay [11]. We decrease the elastic modulus as the network delay becomes longer. The reaction force F (see Fig. 7) is given by

$$F = K_s x + K_d v$$

K_s : Elastic modulus (spring constant) of object

K_d : Damper modulus of object

x : Penetration depth of cursor (i.e., position which user tries to touch or is touching with his/her haptic interface device) into object

v : Relative velocity of cursor to object.

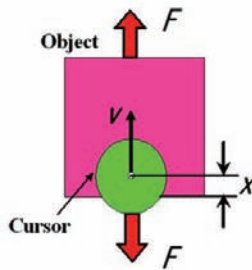


Fig. 7 Relation between cursor and object

The value of x increases as the network delay becomes longer. According to the above equation, the reaction force becomes stronger in this case. Thus, it becomes difficult to manipulate the haptic interface device. This is the reason why we have proposed the adaptive control of reaction force. The adaptive control of reaction force tries to keep the reaction force F constant by changing the value of K_s dynamically according to the network delay (see Fig. 8).

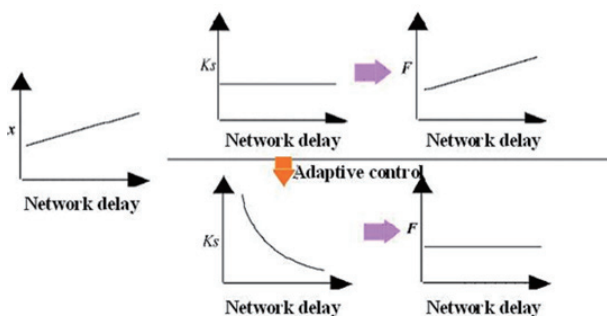


Fig. 8 Relation between K_s and network delay

6. Summary

We explained media synchronization control, causality control, dead-reckoning, and adaptive control of reaction force as QoS control in networked multimedia. We are currently handling stereo video and free viewpoint video as visual media and carrying out QoE (Quality of Experience) assessment. As the next step of our research, we plan to study QoS control in such visual media and other media transmission.

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Hitachi R&D activity in China

Shiro Tanabe

Hitachi (China) Research & Development Corporation



1. Introduction

Hitachi R&D activity in China started from 2000, we had 10 years anniversary last year. It started as R&D section under Hitachi China co., an independent R&D company, Hitachi (China) Research & Development Corporation (HCR&D), was established in 2005. There are two laboratories, Beijing and Shanghai, the total number of members are more than 100. The scale of our company is increasing at 10% per year, that is the same rate of China GDP growth.



Fig. 1 Hitachi (China) Research & Development Corporation (HCR&D)

2. Research policy and research fields

The basic policy is “R&D management using geographical advantages China has”. China has various advantages in market, human, and natural resources. We think that there are many things of R&D activity in China by making full use of China resources. There are several directions of our research:

- (1) Direct contribution to China business by supporting technologies (Mandatory as long as private company)
- (2) Attending China standardization activity to follow Chinese original specification
- (3) Development of core technologies by collaboration with influential universities in China, origination toward all over the world
- (4) Creation of new business and new service in China based on needs of Chinese users

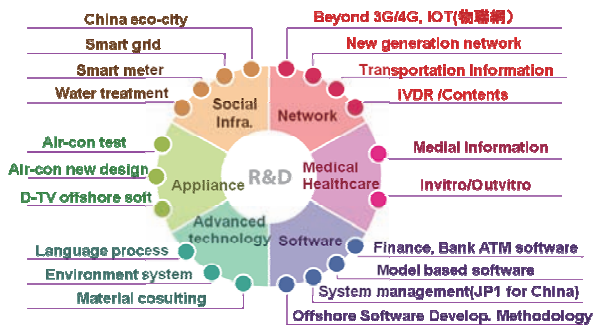


Fig. 2 HCR&D research field

We have 6 research fields : Social infrastructure, Telecommunication, Information system, Medical healthcare, Innovation technology, Save energy appliance.

Through these research activities, HCR&D contributes to social innovation business of China that Hitachi is focusing on.

3. Collaboration with China organizations

3-1 Collaboration with Tsinghua university

It may be said that the history of Hitachi R&D is the history of the collaboration with Tsinghua university. In 2001, Tsinghua-Hitachi joint laboratory was established, this joint activity is continuing today, that is the longest record of Tsinghua joint laboratory. We have various results towards future of China in this laboratories; IPv6, ITS, High speed wireless, and fusion of three networks. The collaboration with China university is one of essential activities in China R&D, especially it is very important when a new research theme starts or enlarge a research theme.



Fig. 3 Tsinghua-Hitachi joint laboratory

3-2 Collaboration with China government

Hitachi Ltd. promotes collaboration with China government in the area of social infrastructure. Hitachi joins “Low carbon society and circulatory economy” project. HCR&D support this project on the technical side. In 2008, we developed save-energy monitoring “Mieruka system” in Yunnan province; displaying the effect of save energy on in real time connecting many factories with wireless links in centralized save-energy center.

R&D in China has already had an important role to modify to Chinese standardization and specification. Moreover, the age of “Reverse innovation”, local developed and made in China for the world, is coming soon. The importance of China R&D activity increases more and more.

IEICE Transactions on Communications - Current Status and Future Direction -

Miki YAMAMOTO

Editor in Chief, IEICE Transactions on Communications



1. Introduction

IEICE has four transactions published in English. Transactions published by Communications society is IEICE Transactions on Communications. In this article, current status of our transactions and some activities for improving our transactions more attractive one are introduced.

2. History

The four English-language IEICE Transactions, originating from the IEICE Transactions started in 1918, publish research which has made, and continues to make, significant contributions to the progress of these fields. Transactions on Communications began to take the current form in 1991. Since 2006, primary subscription style for members has been changed to on-line and printed one can be selected with extra charge.

Members of IEICE Communications Society can access on-line version of our transactions through the following URL.

http://www.ieice.org/eng/trans_online/index.html

3. Current Status

The IEICE Transactions on Communications is now in excellent shape. We received 1,574 original submissions in 2010. Table 1 shows detailed information of our received submission in 2010. As shown in this table, submissions are from 32 countries: 14 countries in Asia, 12 in Europe, 2 in North America and South America, and 1 in Africa and Oceania. The numbers of paper and letter submissions are 879 and 602 from Asia region, 13 and 7 in Europe, 10 and 11 from North America, 2 and 4 from South America, respectively and, 2 and 1 paper submissions from Africa and Oceania, respectively.

Acceptance rate of papers is around 30%. The number of published papers in 2010 is 584 and demonstrates increasing tendency in these 10 years(Fig.1). As shown in Fig.2 of ratio of published papers in our transactions, Transactions on Communications publish papers submitted from many countries and is now an real international journal for Asia-Pacific regions.

4. Special Section

In almost journals, a special section is published with regular papers and letters. In each special section, its editorial committee organized with distinguished specialists and researchers in a specific research field,

handles all review processes of papers and letters submitted to its special section. With this special section, readers can enjoy interesting invited papers and many sophisticated papers in a focused field.

Call for papers for special sections are announced in the following URL.

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

5. Awards

IEICE Best Paper Award and Communications Society Excellent Paper Award are annual awards for distinguished papers selected from all papers and letters published in the IEICE Transactions on Communications. The IEICE Best Paper Award is selected from all papers published in all transactions in IEICE and the Communications Society Excellent Paper Award is selected from all papers and letters published in our transactions, the Transactions on Communications.

All recipients of these awards are listed in the following URL.

<http://www.ieice.org/cs/about/award.html>

6. Open Access

Our editorial board would like to make our transaction more attractive one not only for readers but also for authors. We are now starting a new plan of open access for all invited papers and award winning papers. Please visit the following URL and enjoy high quality papers in our transactions.

http://search.ieice.org/bin/open_access_paper.php?journal=EB&lang=E

7. Editorial Board

Our editorial board includes Editor-in-Chief, three Editors and 64 Associate Editors as shown in the following URL.

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

It includes Associate Editors from Korea and Thailand.

One distinguished associate editor is assigned to each submitted paper. Each paper is reviewed by two reviewers. For each letter, one reviewer is assigned. Without these volunteer hard works of our editorial team, Editors, Associate Editors and Reviewers, we could not maintain the high quality of the transactions.

I take this opportunity to express my gratitude for their great contributions.

8. Future Direction - Please Submit Your Work

Past editorial team launched a working group, chaired by Dr.Hajime Nakamura, which has discussed the improvement of quality of transactions. We are now struggling about these improvements, e.g. open access of invited and award winning papers.

However, the best way to improve our transactions is publishing excellent papers and letters which are attractive to many readers around the world. It is submissions of your excellent works that make our transactions more attractive. I would like to encourage you to submit your excellent work to our transactions.

9. Conclusions

I encourage all of you to actively participate in our community by submitting your excellent work, reviewing submitted papers and enjoying high quality published papers. I also invite suggestions and comments from authors, reviewers and readers on how to improve the quality of our transactions. I am looking forward to working with you to take the IEICE Transactions on Communications on its new level of success.

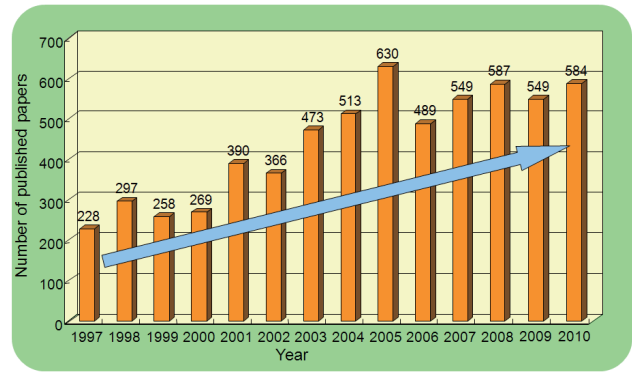


Fig. 1 Number of Published Papers

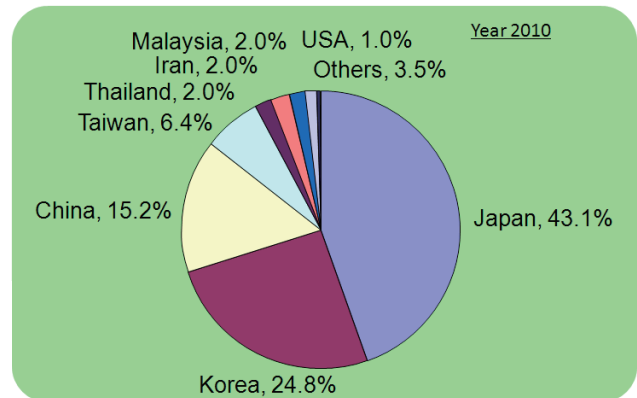


Fig. 2 Ratio of Published Papers

Country	Region	Paper Submission	Letter Submission	Total Submission
Japan	Asia	391	48	439
Korea	Asia	225	333	558
China	Asia	138	174	312
Taiwan	Asia	58	33	91
Iran	Asia	18	1	19
Thailand	Asia	18	2	20
Malaysia	Asia	18	7	25
U.S.A.	North America	9	9	18
Turkey	Asia	6	0	6
Spain	Europe	3	1	4
Finland	Europe	3	1	4
Germany	Europe	2	0	2
Bangladesh	Asia	2	0	2
Pakistan	Asia	2	0	2
Mexico	South America	2	3	5
Morocco	Africa	2	0	2
Ireland	Europe	1	0	1
Italy	Europe	1	0	1
Iraq	Asia	1	0	1
India	Asia	1	1	2
Australia	Oceania	1	0	1
Netherlands	Europe	1	0	1
Canada	North America	1	2	3
Singapore	Asia	1	1	2
Poland	Europe	1	0	1
Portugal	Europe	1	0	1
Greece	Europe	0	2	2
Brazil	South America	0	1	1
Vietnam	Asia	0	2	2
Montenegro	Europe	0	1	1
U.K.	Europe	0	1	1
Czech	Europe	0	1	1

Table 1. The number of Submissions

Report on 27th NS/IN Research Workshop

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 Hikaru Suzuki^{†††††}, Takeshi Kawasaki^{††}, Kiyoshi Ueda^{††},
 Masaki Bandai^{††††††}, Shigeo Urushidani^{††††††}, George Kimura^{†††††††}
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^{††††}The Univ. of Tokyo, ^{†††††}NTT Communications Corp., ^{††††††}Sophia Univ.,
^{†††††††}National Inst. of Informatics, ^{††††††††}NTT West Corp.

1. Introduction

The 27th NS/IN Research Workshop took place in Okinawa, Japan, March 2-3, 2011. The workshop was sponsored by the technical committee on NS (Network Systems) and IN (Information Networks) of the IEICE Communication Society, and aimed to discuss the technical direction and research topics for future networks. A record showing of 183 participants underscored the success of the workshop. The overall theme of the workshop was “Smart and Green ICT.” The workshop featured invited talks, and overview of the invited talks and the panel discussion.



Fig. 1 Overview (Workshop).

2. Invited talks

The general chair of the workshop, Dr. George Kimura (NTT West Corp.), invited five distinguished experts involved in the smart and green ICT. These speakers addressed new challenges in issues of the smart and green ICT from political and industrial perspectives. Figure 2 shows photographs of the general chair and the speakers.

- Mr. Hisakazu Okamura (IBM Japan Ltd.) presented frameworks about smarter city and an actual case of a smarter city in Kita-kyushu city.
- Dr. Shinji Nishimura (Hitachi Ltd.) showed a market trend of ICT and presented network technologies for establishing green ICT.
- Dr. Naoaki Yamanaka (Keio Univ.) presented some network technologies for energy control. One of the technology is called as “Energy Virtual Network Operator (EVNO).”



G. Kimura
(NTT West Corp.)

H. Okamura
(IBM Japan Ltd.)

S. Nishimura
(Hitachi Ltd.)



N. Yamanaka
(Keio Univ.)

S. Ohgane
(Miyakojima
City)

Y. Yasuda
(KDDI Corp.)

Fig. 2 General chair and invited speakers.

- Mr. Shuuichi Ohgane (Miyakojima City) showed public projects for ecological actions in Miyakojima City. Also he showed a plan revitalizing Miyakojima City by the ecological actions.
- Dr. Yutaka Yasuda (KDDI Corp.) showed projects for reducing energy consumption by KDDI. Examples of the projects are utilization of solar power, establishing a technology for reducing standby energy, and actions for preserving forests with KDDI’s customers.

3. Panel discussion

As the chairperson, Dr. Kimura organized the panel discussion. Dr. Kimura and the five speakers (Mr. Okamura, Dr. Nishimura, Dr. Yamanaka, Mr. Ohgane, and Dr. Yasuda) took their seats as panelists, and the audience filled the hall.

First, Dr. Kimura gave the theme of the discussion to the panelists: “What is important for Smart and Green ICT?” The panelists then expressed their opinions from their own perspectives, and actively discussed the

issues involved. In addition, they answered various questions from the audience.

The discussion showed that there is increasing interest in the smart and green ICT.



Fig. 3 Panel discussion.

4. Conclusion

This year's workshop invited key persons to speak on the smart and green ICT. We believe that the presentations given by the invited speakers and the panel discussion provided fruitful insight into research and development.

The technical committees on IN and NS plan to hold next year's workshop in March 2012. Finally, we would like to express our gratitude to the workshop committee members, particularly to, T. Usui (Oki), T. Oishi (Hitachi), S. Imai (Fujitsu), H. Kawazoe (Toshiba), and N Saitou (NEC) who made this workshop possible.

Annual Report of Technical Committee on Information Networks

Shinji Inoue[†] and Naoki Imai^{††}, [†]Hiroshima City Univ., ^{††}KDDI R&D Laboratories Inc.

1. Introduction

The technical committee on Information Networks (IN) is one of technical committees of the Communications Society of the IEICE [1]. The IN addresses a broad spectrum of issues associated with information networks and provides a forum for researchers and engineers to discuss various research and development topics. The chairman is Mr. Hikaru Suzuki of NTT Communications Corporation. The vice chairman is Professor Tohru Asami of the Univ. of Tokyo. The secretaries are Dr. Naoki Imai of KDDI R&D Laboratories Inc. and Dr. Junichi Murayama of NTT Corporation. The assistant secretaries are Research associate Shinji Inoue of Hiroshima City Univ. and Mr. Masashi Toyama of NTT Corporation. This document presents the IN's annual report for activities from April 2010 to March 2011.

2. IN Activities

The IN held nine two-days technical meetings and two workshops from April 2010 to March 2011. Many researchers participated in the meetings and reported their latest technical research and development results. The number of technical reports is one of the largest among all technical committees of the Communications Society of the IEICE. Some meetings are co-organized with other technical committees. The venues and the main topics of each meeting are shown in Table 1.

Each technical report is submitted in a paper and published as a Technical Report of the IEICE. Authors of selected papers have received Information Networks Research Awards the ceremony of which is held in March every year.



Fig. 1 Winners of IN Research Award
(from left to right) N. Imai, K. Yamaoka, S. Ata, H. Suzuki
(chairman), S. Miyata, Y. Okada, S. Miwa

This year, the following 4 excellent papers were selected from 225 papers.

- Naoki Imai, Manabu Isomura, Kiyohito Yoshihara “Coordination Path Control Method for Data Traffic Offload”
- Yohei Okada, Shingo Ata, Nobuyuki Nakamura, Yoshihiro Nakahira, Ikuo Oka, “A Method of Application Identification from Encrypted Traffic based on Characteristic Changes by Encryption”
- Sumiko Miyata, Katsunori Yamaoka, “Characteristic analysis of total call blocking rate of CAC with mixed delay and loss system”
- Shinsuke Miwa, Toshiyuki Miyachi, Takeshi Nakagawa, Hiroshi Nakai, Satoshi Ohta, “Issues on the testbed for cloud computing technologies”

Reference

- [1] Technical Committee on Information Networks
<http://www.ieice.org/cs/in/eng/>

Table 1: Technical meeting schedule

Date,	Venue,	Main topics,	Num. of reports,	Num. of participants each day,
Apr. 26-27	Kikai-Shinko-Kaikan Bldg. (Minato)	Wireless Internet, Multi hop network, Mesh network, Network coding, Cross layer, Wireless communication	9	61, 57
Jun. 3-4	Akita Atorion (Akita)	NGN, IMS, FMC, Femtocell, Home network, Seamless communication, Presence, IPTV, VoD	13	22, 22
Jul. 8-9	Hokkaido Univ. (Sapporo)	QoS control, Network quality, IPv6, IP backbone network, Dependable network, Network model	20	36, 31
Sep. 2-3	Tohoku Univ. (Sendai)	Post IP networking, Network model, Internet traffic, TCP/IP, Multi media communication, Network management, Resource management, Private network, Network Security	22	79, 67
Oct. 14-15	Nagoya Institute of Technology (Nagoya)	Network middleware, Virtualization, Greening, Web service, Internet service, Ubiquitous service, Social network, Sensor network,	16	43, 43
Nov. 18-20	Fukuoka Institute of Technology (Fukuoka)	Home network, Ubiquitous network, Cloud computing, Context awareness, Location information service, E-commerce, and workshop	17	54, 37, 36
Dec. 16-17	Hiroshima City Univ. (Hiroshima)	Traffic control, Policy management, Network anomaly detection, Reliability, Authentication, Naming management, Network security, Privacy, VPN, DDoS	22	36, 45
Jan. 20-21	Osaka Univ. (Suita)	Autonomous distributed networks, P2P networks, Overlay networks, Multicast, Session management, Internet traffic, Contents delivery, Contents distribution, Contents security	26	55, 43
Mar. 3-4	Okinawa Convention Center (Ginowan)	IN/NS technical meeting and workshop	68	258, 260

Quick Recovery from Great Tohoku Earthquake Disaster

Fumiyuki ADACHI, IEICE Fellow
Tohoku University, Sendai



1. Introduction

The earthquake happened at 2:46 pm on 11 March (Friday) 2011 is the biggest one in the last 1,000 years and the succeeding devastating tsunami of height of fear attacked the northeast (Tohoku) coast region of Japan including Sendai. The scale of this tsunami was the first time to happen since the Jogan tsunami happened on 9 July, 869.

The earthquake of 11 March brought serious damages to the no.1 faculty building (Fig.1) of Electrical and Communication Department, Graduate School of Engineering, Tohoku University, standing on the top of Aobayama hill, located in the west of Sendai's downtown. A total of around 20 research laboratories in the no.1 faculty building were forced to be relocated. A number of students of our research laboratory formed a volunteer group to relocate our research laboratory. Thanks to the student volunteer group's great effort, we successfully resumed the research activities within one and half months since the earthquake. Our struggle in the last two months will be reported here.

The earthquake of 11 March seriously damaged the mobile communication networks. Therefore the development of communication networks which is robust against such a regional disaster is necessary. And my thoughts on the future communications networks will be suggested.

2. Our research laboratory damaged by earthquake

In the Aobayama campus of Engineering, three buildings including ours were seriously damaged and it



Fig. 1 Damaged No.1 faculty building.



Fig. 2 No damage to bronze statue of Prof. Yagi.

is decided that they have to be rebuilt. Our faculty building of 8 stories was more intensively damaged on upper floors. And the adjoining lecture buildings were also partially damaged. Fortunately, the date of 11 March was in our spring holiday period and no students were injured. The bronze statue of Prof. Yagi, an inventor of the Yagi Uda antenna, in the courtyard (Fig.2) was safe.



Fig. 3 Devastated research laboratory right after March 11 earthquake.



Fig. 4 Relocation work of research laboratory by volunteer group (upper row)
New computer room, student room, and office after relocation (lower row).

Tohoku University delayed the start of spring classes to 9 May.

3. Earthquake and laboratory relocation work

The earthquake came immediately after we started our laboratory seminar. We heard the earthquake alarm “An earthquake of four in the seismic intensity will come 5 second later, 4, 3, 2, 1”. The countdown was very accurate; however, the seismic intensity level was not 4 but 6. The strongest shake continued for about two minutes and become weaker. It continued for about six minutes in total. We felt fear and couldn’t make moving. After the earthquake, all of us were able to evacuate to the outside safely. It started snowing after the earthquake. However, it became fine weather in the evening, and the moon and stars looked beautiful. I thought it was something mysterious.

Supply of electricity, city gas, and tap water has stopped immediately after the earthquake. It took almost one month to resume the gas supply while electricity and water services resumed in Sendai downtown after one day.

Our research laboratory rooms were devastated (Fig.3). It turned out that the building structure housing our research laboratory was damaged too seriously and as a result, it was decided to be rebuilt. And we had to relocate our research laboratory. Our research laboratory formed a volunteer group of 7-9 students and started working on 23 March (Wednesday) from putting away scattered books, fell down computers and bookshelves.

It was the end of March when we started the relocation of our laboratory. The new location of our laboratory is in the no.2 building next to no.1 building. Thanks to the student volunteer group’s great effort, the laboratory relocation was completed successfully in less than one month from the earthquake (Fig.4).

A big aftershock happened on 7 April and devastated again our new laboratory which was close to completion in setting up (Fig.5). Although the student volunteer group had to restart putting away scattered books, fell down computers and cupboards the second time, our laboratory relocation was completed in the middle of April after their hard working.

In our student volunteer group, there are students who stayed in Sendai and did not return to their hometowns and also one student commuted from Yamagata. It is recently said that younger generation does not have the spirit of helping. However, looking at our volunteers’ wonderful work, I am proud of them who, I felt, have the spirit of helping and the strong passion into research. The student volunteer group overcame the earthquake of 11 March and its aftershock of 7 April and succeeded in relocating our research laboratory into the no.2 faculty building. Our students of Tohoku University are strong in a disaster.

The international students were worried about the radiation poisoning caused by the nuclear power plant accident after the earthquake. They returned home, but started to come back to Sendai in middle-April. By the end of April, most of our research laboratory members gathered again and resumed our research activities.

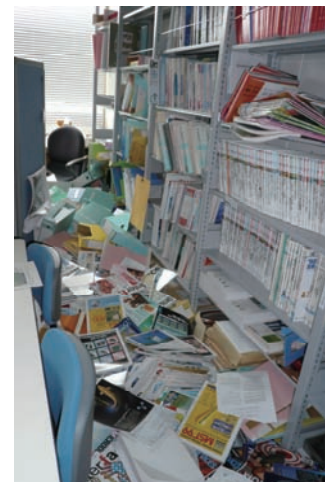


Fig. 5 Aftershock on April 7 devastated our room again.



Fig. 6 Laboratory members with full of smiles in a new room and presentation rehearsal in a seminar on April 25.

Finally, long-awaited laboratory activity resumed. I was very happy to see smiles of laboratory members (Fig.6). We held a laboratory seminar on 25 April (Monday) for the first time after the earthquake of 11 March. A PhD doctor course student who was supposed to present a paper this May at an international workshop in Germany did a presentation rehearsal.

25 April was the date when Shinkansen resumed its operation between Tokyo and Sendai.

4. Robust communications networks

The earthquake of 11 March caused a monster tsunami which can happen only once in 1,000 years and badly devastated the Tohoku coast region. Experiencing such a regional disaster, I strongly felt that securing the communication to confirm the safety of family, parents, relatives, and colleagues is the most important. Wireless communications should have demonstrated its potential at such a regional disaster. However, the communications equipments were damaged by the earthquake and the succeeding tsunami and furthermore, many base stations of cellular systems lost their power supply. Moreover, a concentration of communication demands led to a very low probability of a successful call.

People want to make a real time conversation in the disaster. A communications network needs to be developed that can provide real time conversation to people as many as possible at the same time, e.g., one or two order of magnitude increase in the link capacity is necessary. However, the available wireless

bandwidth is limited. Very low rate voice codec and resource allocation method are an important research topics for extremely high-order wireless multiple access. It is desirable to develop a flexible secure power supply network, cooperative communication between terrestrial and satellite networks, and furthermore the stratospheric platform.

5. Conclusion

I am very proud of the student volunteer group of my research laboratory who did wonderful work at the disaster. I am very glad to be able to resume the research of advanced wireless technologies with those students.

The earthquake of 11 March gave us an important chance to reconsider the direction of communications networks development. It is a quite difficult issue how to realize a cost efficient communications network while robust against a rarely happening (e.g., once in 1,000 years) disaster. We want to share with our friends our experience of the disaster caused by 11 March earthquake and tsunami, and work together towards the new communication technologies and networks.

We received a pile of emails of worry, encouragement, and offering of help from worldwide. We would like to express our heartfelt thanks to those who sent emails. We successfully relocated the laboratory and resumed the research activities at the end of April. Tohoku University survived the disaster and is going on!

The Cover Story

IEEE Electrical Engineering Milestone: Directive Short-Wave Antenna, 1924



The above photo is one of two types of the experimental equipment with Yagi-Uda antenna, and the photo of another one is introduced on the back cover of this issue. These photos were provided by Prof. Kunio Sawaya, Tohoku University.

The plaque of the Electrical Engineering Milestone qualified by IEEE in 1995 (shown on the back cover of this issue) inscribed with the words as follows:

Electrical Engineering Milestone
Directive Short-Wave Antenna

In these laboratories, beginning in 1924, Professor Hidetsugu Yagi and his assistant, Shintaro Uda, designed and constructed a sensitive and highly-directional antenna using closely-coupled parasitic elements. The antenna, which is effective in the higher-frequency ranges, has been important for radar, television, and amateur radio.

Enjoy the Fun of Liberal Research

Shan LU

Dept. of Intelligent Information Eng. and Sci.
Doshisha University



I am a traditional Chinese girl growing in the ancient city, Xi'an, China. In April 2010, I came to the industrial country, Japan, and started my new research work, as a Ph. D. candidate, on modern communication theory.

When I was a child, I had a dream of traveling around the world. During the period of my master's program, I attended several academic seminars talked by international scholars. I was deeply impressed by their novel ideas in their pioneer research work. This made my dream of going abroad becomes more intense. I am eager to become an international student. I want to know their life and research style at oversea universities.

Fortunately, Japanese MEXT (Ministry of Education, Culture, Sports, Science and Technology) scholarship makes my dream come true. The scholarship gives me a chance to work for Ph. D. degree at Doshisha University.

1. Personal Life and Wider World

When I came to Japan, I have my own small one-room, like most of the Japanese university students. I was exciting for that I firstly have my personal life space. This is different from the dormitory in the Chinese university, where several classmates share a room. However, this excitement did not last for a long time. This personal life of one-room made me feel alone, and reminded me my lively life at Xidian University, China, where I studied for six and half years.

In most of Chinese universities, classmates live in the university's dormitory. In my mater's period, I shared a room with other three classmates. We lived and learned together day and night. Every day, we chatted on interesting things, and exchanged ideas on the life as well as research. Sharing the common life space supplied us more opportunities of discussing about research. This free discussion is more helpful to exchange information than the formal discussion in the lab's seminar, I think.

Contrary to the dormitory's life at Xidian University, the one-room life in Japan disappoint me at first. When coming back to the silence room, no chatting and no laughing fill the room. I was a little blue on these days.

After a few days of this blue life, I had to change my life style, because it was a little deviation of my original purpose to Japan. I decided to go out, and initiatively to communicate with more Japanese.

In order to improve my Japanese language, I watch TV everyday to learn Japanese. From TV, I also understand some Japanese sight-seeing, culture, and tradition. It makes me more eager to understand more about Japan. During one year's life, I visit many Japanese sight-seeing, such as Zenko-Ji at Nagano, Nara Park at Nara, etc. The beautiful scenery fascinates me so much.

To communicate with more Japanese, I joined a chorus. In the chorus, I met many Japanese friends, including university students, employees, and housewives. They are enthusiastic to talk with me, and are help to fit in the chorus group. Through practicing the songs together, I have known a little more Japanese life, society, and ways of doing things, such as serious, specialty, patience, and term spirit.

In addition, to expand the opportunities of exchanging research information, I try to find more time together with lab members. For example, I often invite them having lunch and dinner together in university's cafeteria. The free discussion during the lunch and dinner time helps me to know lab members' research progress. Moreover, I take part in the seminar in the lab more actively, such as more active thinking and asking questions. Also I give more presentations than that scheduled. These activities also improve my communication skills with Japanese students.

In my personal life, I have more freedom to choose the lifestyle I like. The one-room life makes me try to meet difference kinds of friends. Thanks to the one-room life, my personal life style brings me to wider world.

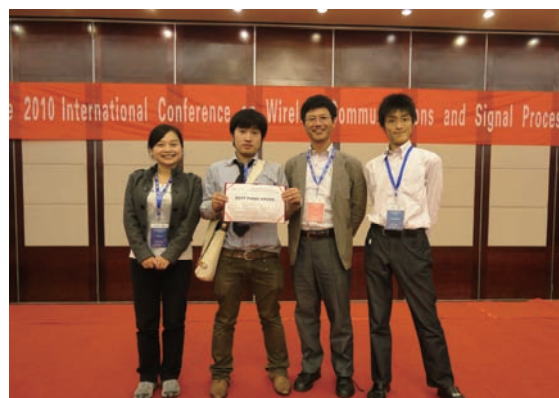


Fig. 1 Participating in International Conference of WCSP 2010 with Professor and Lab Members

2. Liberal Research Gain More Harvest

Our Ph. D. work is focusing on multi-user coding for multiple-access channel, where multiple users share a common channel. My objective is to propose an effective multi-user coding scheme for the multiple-access system, where user separation and noise tolerance can be implemented in a common decoder. It seems to be an interesting topic, and is worthy to research. I was asked to resolve this problem. I was told that the schedule of my Ph. D. work can be made by myself.

Just got this topic, I was confident of doing my Ph. D. work by resolving the problem, because I have grasped relative signal-user coding background during my master's course. At Xidian University, I studied on communication engineering, and received a master's degree in Communication and Information Systems. As a postgraduate student, I think that I have built a solid foundation on channel coding theory by attending major advanced courses, reading about established theories, and doing some researches. During my master's research, I participate in a research and development project group. The project has detail plans such as schedule, research ways, and expected results. As a member of the group, my work followed with the project's schedule step and step. Finally, the result can be obtained as expected.

However, along with reading some relative articles on multi-user theory information and coding, I found that multi-user coding is still an open problem, because there are a few articles on this problem. So far it has not an effective method to resolve this problem. I have full free to consider and resolve this problem.

Up to now, I am aware of the difference between master's and doctoral work. To my understanding, as an undergraduate student, he/she are required to learn basic knowledge, and find some approaches to solve a problem, such as doing some research projects for engineering application. On the other hand, as a Ph.D. student, he/she will be expected to discover some laws of nature, and by applying these laws to resolving more open problem.

Facing the open problem, I have to broaden my horizons by reading more theoretical articles and books to model the problem mathematically. By observing the mathematical model, I am going to make some attempts at finding some mathematical tools to give a solution to the problem. Under the guidance of my advisors, I can "freely" schedule my three years' Ph. D. work.

I know that it exists more difficult to complete my research. I am lucky enough to be able to freely think, think, and think during the three-year work. In my opinion, the liberal thinking can train us more research skill, such as how to collect and rearrange information on the research background, how to compare and analysis the different approaches, how to create novel ideas, and how to find a solution to a problem.

Ph.D. work is a liberal research which offers us more free time of thinking. Persistent thinking can improve my research capabilities comprehensively. Thanks to

the liberal research, I am sure that thinking will bring me more harvest.

3. Continue to life in Japan

One year's international student life brings me to a wider world, and I am sure that thinking will bring me more harvest. As Joseph Hardy Neesima, the founder of Doshisha University, said, "Freedom is my own motto."

Life will go on. I will continue to enjoy the fun of liberal research and strive for more gains.

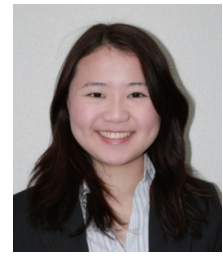


Fig. 2 Library of Doshisha University
(Kyotanabe Campus)

The Adventures of an International Student Studying in Japan

Koh Kim Huey

Department of Electrical and Electronic Engineering
Tokyo Institute of Technology



Introduction

Never in a million years that I would dream of having this opportunity to write in the 35th edition of Institute of Electronic, Information and Communication Engineers' Global Newsletter. To begin, as a self-introduction, I hold a Bachelor of Electronics Engineering majoring in Telecommunications from Multimedia University, Malaysia, I later pursued my master degree in Electronics and Electricals Engineering at Tokyo Institute of Technology under Professor Ando in Ando and Hirokawa Laboratory. Currently, I am employed at Schlumberger Japan which is an oilfield service company as a manufacturing Engineer.

I called my amazing journey in Japan so far as an adventure because it includes all the ups and downs, culture shock and finally when everything made sense to me and to people around me, it turned into a blossomed, fruitful and exhilarating experience.

The Adventures in Japan

Firstly, this adventure of me landed in Japan, and the story of how I landed in Japan inextricably intertwined with Ando and Hirokawa Lab begins very simply. It begins with admiration. As a bachelor student in Malaysia, I was encouraged by my lecturer to study the journals and papers published by Ando and Hirokawa Lab in order to learn the latest development in antenna system and its technology. With such sense of deep admiration for their remarkable researches, I was determined to try my luck by applying for Monbukagakusho Scholarship, the prestigious scholarship offered by the Japanese government. It was a surreal feeling after I found out that I was one of the successful candidates for the scholarship.

So, my adventures begin as a Japanese language research student. We all know that a common language between two people is the only tool to form the bridge of understanding. Therefore, learning Japanese was top of my priority that time. However, I must confess that learning Japanese language is not as simple as I thought, or to somewhat an extent, profoundly difficult. It gets more complicated especially in the Japanese society, the senpai-kohai rule is practiced very rigidly, and so, even the language is used accordingly to the hierarchy system. Language is also known as the gateway to understand society's norm and culture. As a foreign



Fig. 1 Annual event of group photo taking for Ando and Hirokawa Lab

student completely new to this system, it appeared as a total culture shock for me.

After so many attempts of trying to learn the Japanese people's ways of communicating and sadly to no avail, it is hard not to feel a little bruised and disheartening. This of course did not deter me from wanting to continue to pursue success. The key of dealing with this is: Always keep an open mind. It takes tons of patience and time as a mutually learning experience. It is entirely up to an individual the capacity to accept, adapt and tolerate living in an utterly different new environment and culture. The success lies in absorbing the positive traits of that particular culture rather than instantly dismissing it without trying. On the route, it is crucial to understand that your own culture and background may differ from what you face in Japan; therefore, always keep an open mind works for me as a cultural exchange learning experience. By understanding this, I started to see things from another perspective and gradually become accustomed to this whole new experience. For example, I swiftly switch between different grammatical forms of Japanese language responding to different person in the lab. As an international student, I think this huge effort is essential as the first step of showing politeness and respect to the Japanese community.

Cutting Edge Technology

Japan is famous for cutting edge and super advanced technologies and robots. Having the chance to stay in Japan, the first glimpse of these advance technologies system is surprising – the punctuality of public transports, the touch-screen vending machines, the high-speed internet connections. It is only when you are involved in a research project of a university's

laboratory; you could somehow understand that all these success comes with no surprise except hard work. The severe disciplines that all the academicians and students poured into their works are immense. By investing loads of hard work and efforts into the research, only to produce quality conference papers and journal papers, indirectly contributing to the advancement of technologies in Japan and to the world.

For example in Ando and Hirokawa lab, for my master's degree research project, I was thought the whole engineering process from designing, simulation to prototype fabrication and test antennas measurement. Every process involved a lot of challenges and detailed planning. In addition, more issues and problems would surface and needed to be solved after each process. Along the researching journey, I am required to write conference papers, attend both local and international conferences, and sharpen up my presentation skills from each presentation. By having the chance to conduct research in Ando and Hirokawa lab, provided with enormous support system and guidance, this is not just mastering discipline in engineering for problem solving, but also shaped me as a better person with well-trained mind, and virtues like patience. It was indeed a refreshing learning experience for me.



Fig. 2 International Symposium on Antennas and Propagation in Macau with lab members.

Conclusion

Living in the world today as global citizens, where information and computing has infiltrated every aspect of life for everyone, it is almost impossible to live disconnect to the outside world. Therefore, it is our responsibility to share global interests. Thus, as an international student studied in Japan, it is absolutely a privilege to have access to the incredibly vast and extensive knowledge on science and technologies in Japan. It opens my eyes to a world-class and truly excellent nation. I am really grateful that I have this opportunity to have this fruitful learning experience.

Thank you IEICE-CS for continue pushing to publish English versions of global newsletter. I believe this will bring Japan and the world closer together, where both continues to shine in the world stage as one.

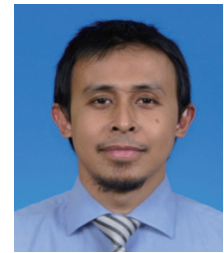
Lastly, as Japan received world's condolence for the 2011 Tohoku Earthquake and Tsunami Disaster, where more than 27,000 people had perished in this natural disaster, it is also important to help Japan nation to reconstruct and revitalize Japan after the massive damage. From the bottom of my heart, that I truly believe Japan will recover and I wish the best for Japan in coping with this catastrophe.

It's time to copy and paste

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1. Sublime importance

We may take it for granted but the ‘*copy and paste*’ functions that built into our computing applications are actually very important. Imagine that these functions are absent. If we need to write the same text, we have no other choice but to literally re-write the entire text. And that can be dauntingly difficult. But the importance of ‘*copy and paste*’ does not necessarily limit to the computing applications. There are other scenarios where these functions have their hidden roles. A good example is when a person is living in a foreign country, like I am. In this article I hope to share with the readers what I meant, how I have used, and what will I do, with the concept of ‘*copy and paste*’

2. Background

Why do we need to copy from something? We copy when we know and believe that what we are copying from are something of importance and valuable to us. If otherwise, or we don't like it, or we believe that thing is against our preference, we will not copy it. Let us use a simple example. If we were planning to cook a new type of dish, we search for recipes for variety of dishes, decide which one that we believe is the most suitable, copy the recipe, and ‘*paste*’ it when we preparing for our dish. We may not be able to implement it 100% as the original, but the effort that counts. ‘Copy and paste’ new ideas, behaviors, lifestyle can prevent our life of becoming stale and predictable. How is it related to me? I think this should be the best time to make a brief introduction.

I am a PhD student majoring in Network Management at Asami-Kawahara Laboratory, Graduate School Information Science and Technology, the University of Tokyo, since 2008, under the Japanese Government Scholarships (Monkagabusho) program. Malaysia is my homeland and while pursuing my PhD, I am also a full time employee at Telekom Malaysia or TM, where TM in Malaysia is analogous to NTT in Japan, i.e the biggest telecommunication company in each country.

There is an (almost) unknown fact of being a Malaysian student in Japan. As Malaysia consists of three main ethnic groups: Malay (me), Chinese and Indian, I had a few times experienced that I was expected to be able to speak Chinese as other Malaysian Chinese are able to. The reason is simply there are more Malaysian Chinese than Malay especially in my University, and their capabilities of

writing/reading Kanji is an obvious contributing factor (I cannot read or write Kanji) for this situation. Another distinct difference is the religion: Malays are Muslims whereas non-Malays follow their traditional religions (such as Buddhism or Hinduism).

Coming back to the ‘*copy and paste*’ philosophy. As a foreign student in Japan, we should embrace this philosophy in a bidirectional way: From Japan to our country, and vice-versa. Let's dissect this idea in each direction.

3. Things to copy from Japan

Culture. There are many things within the Japanese culture that we can copy, spanning from food, lifestyle and behavior, and I had actually copied a few of them into my life. Food for instance, definitely a ‘MUST’ copy item. The main difference between Japanese and ours is simply less use of oil (in cooking) and sugar (in drinks). Have you tried to drink pure black coffee without sugar or milk? I found it difficult even to swallow the coffee in the beginning, but gradually managed to ‘*paste*’ it as my own way of drinking. I must confess, I tried to ‘*paste*’ this type of drink within my family. As you may have expected, my efforts are without much success. Other than food is how Japanese people can tolerate in a crowded train. Once I took a train during a peak hour from Komaba-Todaimae station heading for Shibuya. When the door was opened, I saw that there was no more space left. Really. No more space. But to my surprise, you can still squeezed in at least 5 more passengers. And the passengers who are already inside the train did not complain. Should this kind of tolerance be copied? I think I should.

Technology. Nothing beats Japan when it comes to gizmo and gadgets. Some things you can clearly agree that ‘*only in Japan*’ can you find certain unique stuff. My interest is however more subtle than the physical gadgetry itself: *it is how the idea was generated*. It shows Japanese has tremendous amount of creativity, and that is definitely a crucial item for copying into our lives. Creativity allows us to think outside the box, creating new technology along the way. However, we also need to copy the environment of which this creativity is explored and expanded. Then, hopefully the same technology can bloom in our countries.

Research infrastructure. I am inspired by the abundance and mature research infrastructure that Japan has. In this case, IEICE is one of the responsible parties that flourishes and nurtures young and talented

researches into becoming world-class'. This infrastructure bridges the gap between academia and the industry, and both can taste the sweetness of their research being acknowledged and appreciated. I was one of the lucky ones. To my surprise, my paper was selected as the best papers within the Information Network (IN) category for the year 2009. It shows that if you can come up with an interesting, radical, provoking, but original idea, it will not go into waste. In my plan to 'copy' things from Japan, this would arguably be my most ambitious. When I return to Malaysia and continue working with TM, I wish that TM too can play the same role as IEICE, not directly organizing the conferences and technical workshops, but as the leading driver in building this infrastructure. The rationale behind my intention is clear: TM has all the technical experts, practical problems and resources, and students in the local Universities have the ideas, determination and zeal. If these two factors can be fused into one, it is a match made in heaven and a recipe for success



Fig. 1 Summer camp at Oze National Park, 2008

Nature. For a country where less than 20% of the areas are habitable, it is a double-edged sword. On one hand, people crammed into small areas causing high population density in those areas. On the other hand, Japan has plenty of beautiful places with serene skies, blue seas, white mountains, colorful forests and most importantly, relaxing hot springs. I was again fortunate to explore these areas since our laboratory organized summer camps annually. I have been to Oze National Park and Nikko (2008, Fig. 1), Yamanakako (2009, Fig.2) and Nasu (2010, Fig. 3). Malaysia has similar things to offer, but I took it for granted. However, realizing how I enjoyed my trips to the summer camps,



Fig. 2 Summer camp at Yamanakako, 2009

I should do the same for Malaysia, i.e. I should 'paste' the same kind of appreciation. In fact, I had pasted this appreciation on my recent trip back home. I went to an old cave situated about 2 hours drive from Kuala Lumpur. This cave, called as 'Gua Tempurung', is more than 3 km long, and one of the longest caves in Peninsula Malaysia.



Fig. 3 Summer camp at Nasu, 2010

4. Things to paste in Japan

Culture. The food! What else is there that carries the same significant of identity of a country other than food? (well, language is one too). So, when I have the chance, I will 'paste' samples of the extraordinary Malaysian-Malay food to my non-Malaysian friends. Until now, I have managed to do a few: *roti canai* (a flat bread), *nasi lemak* (rice cooked with coconut milk) and *nasi goreng* (fried rice). Until now, it seems they are enjoying these dishes and it really gives me a sense of satisfaction. Beside food, my other cultural identity is strongly influenced by me being a muslim, where among others: eat/drink *Halal* things (which include the infamous of no eating of pork and drinking alcoholic beverages), daily ritual prayers and fasting in the month of Ramadan. Pasting these culture behavior is challenging when the surrounding environment is absent of the normality as one in the home country. In this case, it goes back to the individual determination: *when there is a will, there is a way*. For example, the summer camps at Oze and Nasu were organized during my obligatory fasting in the month of Ramadan, but it did not spoil the fun! From my experience, the challenge of practicing one's religion in Japan is overhyped. In fact, Japanese are now more aware of religious duties and requirements of foreigners. Thus, maintaining one's cultural/religious identity is an essential item to be 'pasted' in Japan.

Spirituality. I think it is good to share with the Japanese on the spiritual part of our life. We may share our ideas and beliefs that soothe our hearts. In my case, I have discussed with my friends on big questions of our life: *Where do we come from? Why are we here? Where are we going to?* Through these discussions, we can expand our wisdom that will be as beneficial as our academic qualifications.

5. Closing remarks

It is the time for us to 'copy and paste' in real-life applications, either from or to Japan, giving benefits to both the Japanese and our countrymen.

Study in Japan - Exploring and Enjoying the Diversity

Tran Minh Quang

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Tokyo, Japan



1. Introduction

One may think that Asian students have the advantage over their friends who come from Western countries when they study in Japan. This advantage comes from the similarity of several custom and cultural traits from Asia countries and Japan. Although, the culture gap between them is smaller than that comes from the Western countries, this advantage is not adequate for Asian students to avoid a culture shock when they study abroad in Japan. The culture shock may negatively affect the quality of the students' daily lives as well as their research activities. One of the best ways to overcome this essential issue is to prepare ourselves for exploring, accepting and enjoying the diversity in Japan.

First of all, I would like to express my gratefulness to the IEICE for giving me a chance of sharing my personal opinions on the "GLOBAL NEWSLETTER" magazine. Secondly, I would like to briefly introduce myself. I come from Hochiminh City University of Technology, Vietnam. I came to Japan in Jul. 2004 for the first time under the JDS (Japanese Grant Aid for Human Resource Development Scholarship) program and got my MEng. in computer science and engineering at Ritsumeikan University in 2006. In Jul. 2009, I came back to Japan as a Ph.D. candidate at Shibaura Institute of Technology, Mobile Multimedia Communications Laboratory. Although this is the second time I am in Japan, many and many things are new which require me to learn more. As an Asian student who is studying in Japan, I have been experiencing and partially overcoming some difficult stages of the culture shock which I would like to share in this article.

2. The Culture Shock

The culture shock may hit anyone who studies abroad. The way you respect other people, the way others show their attentions to you, the food, the living standard, the language, the living environment, the cultural background and so on, are different with those in your countries. These differences strongly affect your living quality as well as your research activities. However, the culture shock does not come immediately.

The first six month is the most wonderful time of your living abroad. At this time when you are eager to explore and investigate the differences between Japan and your countries. You usually examine the facts based on their "positive" aspects. For example,

Japanese are very kind, friendly and enthusiastic when they help you; the study environment is very good and modern which is potentially useful for your research, and so forth. In addition, in this period you usually participate in many different activities with all your passion such as orientation meeting, meeting with your professor, finding and renting your apartment, having welcome parties with your friends, etc. These activities take all of your time letting you no slack time for a "negative" thinking.

After this wonderful time, however, is a backward step in your journey. When you become accustomed with the basic living condition, the new things lose their interests to you. Instead, you miss your parents and your friends more. In addition, the "negative" aspects expose to you more since your Japanese may not be relevant while you have to manage your daily lives by yourselves. Some barriers or difficulties come with you from the daily communications. You may wish to meet your friends to talk with each other in your native language. You may wish to have a rest time to visit your family. You may sometimes have a difficulty to sleep at night. This difficult period may last for around 4 to 6 months and usually ends up with a trip visiting your home country. Therefore, if it is possible, you should plan to visit your home country in the first year study abroad. If you cannot manage such a trip, you should understand the aforementioned mentally changing to avoid any worse situation. Instead, you should participate in more outdoor activities. By the time, the situation will be better.

3. Studying and Enjoying the Diversity

As mentioned before, one of the best ways to overcome the attack of the culture shock is to open your mind exploring and enjoying Japan with all your passion. Fortunately, Japan is an incredibly diverse country where you can not only enjoy the Japanese traditional culture but you can also experience the culture imported from other countries. Because of this diversity, beside the traditional strict features, Japanese people are also very open-minded in accepting your differences. Therefore, you should not be worried about your differences, but instead you should introduce them to your Japanese friends and at the same time study their Japanese traits.

If your study term is long enough (e.g. more than 1 year), you may comprehend and be attracted with local culture. The local Japanese culture is fascinating,

mysterious, serene, wildly colorful, and at the same time strange for oversea people. In the “Obon” season you will have a chance to experience a plenty of festivals which are different in each local area. You can enjoy with your friends having a can of beer with snack under the fireworks. It is a fantastic and romantic scene that nobody can forget.



Fig. 1 The traditional beauty at a Kimono Festival

After the “Obon”, you can enjoy the red-leaf sight-seeing and welcome the winter. There are few outdoor activities in the winter except skiing or some snow related activities. For my opinion, the winter is the harshest season in Japan. It is very cold for those who come from tropical countries. Every tree defoliates and it is very difficult to find a green field. However, if you have ever passed a winter in Japan you can experience what is the diversity and how strongly the diversity exchanges. A nice day in the winter, some strange winds come making you warmer. You may not pay attention to such movement but you may have to stop and look around the scene when you go out feeling that everything is moving. The park is bright with plenty of flowers, new buds sprouting on the trees. This is the time the spring arrives.

The early spring (around the beginning of April) is the time for the “Hanami” festival. It is the time you can enjoy with your friends and your family under the beauty of the cherry (Sakura) bloom. With the warming atmosphere, people are more open-minded welcoming a new “working” year. I am very interested in and love the way Japanese respect to the Sakura in the “Hanami” festival. They welcome the Sakura bloom with all of their passion as if they had not ever seen this flower’s Queen. In this season, everything, from the people to the scene, is very attractive.

The diversity of Japan is also represented by the people, both Japanese and oversea ones. For my point of view, there are no foreign people but only oversea ones in Japan since we are friendly respected here. In most of festivals that I have ever participated in, I always meet many oversea people. They enjoy the festivals with Japanese and Japanese are also happier when they express their local culture traits to their

oversea friends. They play, dance, drink and make and sell oversea or Japanese food or souvenir products together. They also group together under the Sakura tree, talking, sharing their feeling while enjoying the beauty of the Japanese Flower. These activities not only prevent us from feeling lonely while living abroad but also help us to build good international relationships, and more important human to human relationships.

4. Accelerating Research and More

We come to Japan for study, thus we may deeply think of or even worry about our research missions. We usually ask ourselves questions as follows. Is our research theme appropriate? Is our supervisor Professor strict? What will she/he ask us to do? Even sometimes we wonder about our research capacity. These questions and worries are nonsense but come from our over-worried. Therefore, we should control our feeling to avoid such questions. Instead, we should keep our confidence and believe that our effort will be paid off.

At the first several months you may have several chances to discuss with your supervisor Professor on your research theme. Similar to me, someone may expect that our supervisor Professor will hand us a clear research theme to follow up. If you thought so, you must be disappointed. My Professor has told us that “Research is to find novel solutions which solve the existing issues. There are many approaches to the goal based on your creativity and innovation.” Therefore, instead of waiting for detail tasks assigned by your Professor, you should be active to search, propose and discuss on your own ideas. Your Professor will redirect you when you miss your direction.

Sometimes we are very stressed with our research difficulties, especially when we are stuck on some issues. To overcome this issue we should understand that the difficulty is an essential part of the research which makes it more interesting. “Raising the bar” step to by step to solve the issues incrementally is one of the appropriate approaches. Be happy with your detail (even a small) result everyday a wider road will open to you on the next day. Another way to stress out is to diversify your research and study activities. Instead of staying all days with your computer reading research paper, writing report or programming, you should participate in some complement courses/activities for refreshing. For example, in my University, Shibaura Institute of Technology, we have the so-called “Sigma” program where the knowledge on technology management and innovation are taught. You can apply this knowledge to accelerate your research activities as well as into your career in the future.

Study in Japan is a great opportunity for experiencing the diversity which lasts from the living environment, the weather condition, the friends around you, to the ways you conduct your research. Research and other daily activities should be balanced to make your life more comfortable. This is a great environment for you to form yourself as a meta-national citizen.

University Life and Cultural Experiences in Japan

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1. Introduction

At first, I would like to thank IEICE (Institute of Electronic, Information and Communication Engineers) for giving me the opportunity to share some of my experiences as an international student in Japan for 9 years. I was born in Sri Lanka and came to Japan in April of 2002 as a technical college student, which supported by Monbukagakusho scholarship program. I received the B.E. in information systems engineering and M.E. in information networking from Osaka University in 2008, 2010, respectively. I am currently working towards the Ph.D. and 2nd year student in Murakami Lab at the Osaka University.

2. First year in Tokyo

After finished my high-school in Sri Lanka in 2000, I had an opportunity to apply the “Monbukagakusho” scholarship for technical college students. After few interviews and exams I was luckily selected as a college student for Yuge National College of Maritime Technology in Ehime prefecture. The only problem was that I had to follow all of my college courses in Japanese language with zero knowledge. However, after I came to Japan in 2002, I enrolled in 1 year Japanese language program in Tokyo as a part of my scholarship program. There were more than 80 students came from around the world and we all lived in a student dormitory near to Shibuya in Tokyo.

From the very first day in the school, teachers were using only Japanese and gestures to communicate with us. At the beginning, it was very difficult to understand them. But, after 6 months we were able to have short conversations in Japanese. Meanwhile, the dormitory life had become more fun. Everyone in the dormitory wants to practice Japanese and it help us get to know each other very well.

Finding the food suit my taste was one of the main tasks in my early days in Japan. In Sri Lanka, we eat spicy and hot curry with bread or rice for three meals and most of them are homemade. The curry served in Japan is adapted to Japanese tastes and milder than real Sri Lankan curry. However, there are variety of curries and most of them taste good. I remember the first time I have had Japanese noodles “Udon”. I hardly felt some taste and I put mass amount of Shichimi (blend of several spices) to make it hot.

3. Exploring the Country side

After finished my Japanese studies in Tokyo, I moved to Yuge Island in Ehime prefecture and enrolled in Information Science department of Yuge National College of Maritime Technology. Yuge is a small island in the Inland Sea (Setonaikai), about 3000 people and most of them make living with farming and fishing. In the time I was in Yuge, there was only one small supermarket, one co-op store and few other shops on the island. On the other hand, people were friendlier and cost of living was much lower than in a large city. It also has the long-term advantages such as learning more Japanese and actually joining a Japanese community. From my point of view, people lived in country side are friendly, upfront, and like to live out things. In my 3 years in Yuge, I used to travel a lot with my friends and we traveled most of the places in Shikoku, Honshu and Kyushu. We found that “Seishun 18 kippu” is cheaper and more flexible rather than Shinkansen, especially when you are traveling with a rough plan.

4. University life in Osaka

After finished my studies in Yuge College, I moved to Osaka University in 2006 for further studies. In the fourth year in university, I joined the Murakami lab to do the research necessary for graduation. In first 6 months in the lab, I had some seminars and classes held by the senior lab members to obtain the basic knowledge for the researches. After getting some idea about study area of Murakami lab, I selected the Ubiquitous Network team which was one of my personal interests. From then, I made it through to doctoral course and I am still working with the Ubiquitous Network team. We have a team meeting for once at a week where we discuss the progress of our research. It is very helpful to brush up the quality of the research and exchange the knowledge between each other.



Fig. 1 GLOBECOM 2010 at Miami

In our lab, we mainly study intelligent networking systems based on parallel and distributed computing. Our research interests include very high-speed communications in computer networks, integrated network processing of multimedia information with various attributes, and effective resource sharing with wide distribution. We study both hardware and software including its system configuration and realization especially.

Our lab members are also actively participate in conferences and seminars both domestic and international. Students are encouraged attend to the international conferences. Last year I attended to my third international conference GLOBECOM 2010 at Miami.

Fig.1 was taken at Joe's Stone Crab Restaurant at Miami. In Fig.1 from left to right, Assistant Professor Y. Tanigawa, Associate Professor W. J. Hwang, Professor H. Tode, Associate Professor K. Kinoshita, and me on the right side of the picture.

We also have lot of events in our lab. First event of the year is in April starting with Cherry-blossom viewing and welcome party for new members. We have at least one event for each month. Lab's summer trip is one of the biggest events in our lab which everyone waiting for. Fig.2 was taken at Koyasan Shukubo Temple in Wakayama which was a part of the 2009 lab summer trip. Those events are helping us to refresh our minds and concentrate on our research.

Finally, I would like to thank again IEICE for giving me this opportunity. I would be happy to be of any reference to you. If you have a chance, please visit us and you are always welcome.



Fig. 2 Lab's summer trip Koyasan

A Dream Realized in Japan

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1. Introduction

I am a citizen of the Republic of Malawi [1], with many questions about radio. My late father, Mr. W. Grant Mikeka Mkandawire had a very big AM radio that served him well with news as a politician. He treasured his radio so much that he never allowed me to play near it or touch it. When I was 4 years, I used to sit a few meters away from the radio and ask questions about how the people inside the radio felt. Based on the voice I heard from the radio, I could tell there were older people but these people must have been very small to fit inside the radio. Whenever my father turned on the radio, these people were always talking. From this observation, the obvious conclusion was that these little people were just dedicated to making announcements on the radio. I could not understand that there was a broadcasting station elsewhere, and my father's big radio was only a receiver.

In 1985, I left my father's house to live with my uncle, Dr. Ndalapa Mhango, who was an educator. Unlike my father, my uncle had several radios and cassette players, some of which were faulty and lying idle. I saw an opportunity to experiment with the faulty ones in the hope of reviving them. I did not know where I got the motivation. My uncle allowed me to play with the faulty radios, but warned me never to touch his Japanese JVC, which was in those days, a state of the art single deck radio cassette player. It was easy for me to obey him as I recalled my father's command. One day, I opened one faulty radio and the faulty cassette player to investigate what was inside the radio, and also why it was deemed faulty. Inside the radio, I found an inscription: "Sony, Made in Japan". I looked at the electronics and found some transistors labeled 2SA, others 2SB and the PCB with the inscription: "SANYO, Japan" as shown in Fig. 1. This immediately led me to make two conclusions. Firstly, I concluded that radios must have originated from Japan. Secondly, that I could make my own radio with either the 2SA or 2SB SANYO transistors. I never bothered about the resistors or capacitors I saw on the board. So I started looking for the transistors in radio repair shops. I managed to pick disposed transistors from the repair shops. I realized that I also needed batteries but had no money to buy them. Not to be discouraged, I applied logic and said, why worry about batteries when my uncle simply plugs his JVC radio to the 240V AC mains supply. Take note, I had no idea about the transformer inside the

JVC radio. I decided to perform a small experiment to test whether the power available from any other socket (AC mains) was usable. I thought connecting a motor from the cassette player was the best test because I would see the motor rotating. I embraced this idea and looked for a pair of scissors to cut the motor connecting wires out of the cassette player. I successfully disconnected the two motor power supply wires from the circuit board and unscrewed the motor. It was a 6V DC motor. I removed the sheath from each of the red and black connecting wires, ready to insert them into the AC mains socket. A thinking moment; the Malawian mains socket is British by design; the socket normally has 3 insert holes positioned like vertices of a triangle, one for neutral connection; the other for supply.

I never knew about this. I decided to do some combinations and permutations, until I selected two socket holes that would supply power and drive my motor. As often said, the first guess is often the right guess. I connected my motor and a big blast and white smoke came out. The wires melted and the motor was thrown hot off my hands. I was shocked but quickly fitted the motor back into the cassette player, cleaned up the house and continued as if the whole incident never happened. The point was clear to me; AC mains were not user friendly. At this time I was only 9 years old and never knew the difference between 240V AC and the 6V DC the motor required.



Fig. 1 The SANYO 2SB transistors.

In 1989 when I was 11 years old, I made my first AM radio using two 2SB transistors connected as a Darlington pair. It was powered by one used battery. The antenna was a 2 - 3 meters long wire connected to the corrugated iron sheet roofing of our house. I operated the radio from Mangochi, Malawi

(Coordinates: 14° 27' 36" S 35° 16' 12" E) and was able to tune to AM radios from other countries other than my own, for example, Mozambique (Maputo Station) and Zambia (Lusaka Station). I improved the Darlington pair circuit by adding a stick coil, and a tuning capacitor to select stations. All this was by inspiration. I never knew about the LC tuned circuits. My radio could be heard 3 meters away using a speaker that I made from scratch. This was a great witness to my uncle, neighbours and relatives.

An even more exciting, accidental result was found in 1990 when I got hold of a glass encapsulated diode, which I connected to my antenna, thinking it was a light emitting diode (LED). The LED was supposed to light up at night to caution passers-by against nearing my radio installation. However, before I connected the battery, I heard a radio station tuned in my headset. The headphones were a set I picked from a telephone exchange garbage site (i.e. a typical telephone booth earpiece). I was puzzled but also excited to discover I could achieve a batteryless AM radio. It solved my predicament of needing to buy batteries when I had limited financial resources. Note that I did not know that the glass encapsulated device was not an LED but rather a diode capable of AM detection and self bias. I started removing one component after the other to check what made the radio circuit. I ended up with the earpiece, the diode and the aerial. This was the virgin radio that I made by 1991 while in Junior High School.

Since then, my prayer was to find an opportunity to come to Japan and peradventure explore more in the world of radio engineering. I was fascinated with each electronic gadget that had a signature, "Made in Japan." This includes the Casio and Seiko alarm wrist watches, which I got from my uncle as presents for best scores at School.

2. The dream to Japan comes true

In 2005, three years after I graduated with a Bachelor in Electrical Engineering from the University of Malawi, I was awarded a scholarship by the Japanese Government to study for a Master in Engineering, specializing in Wireless Communications. Today I am in the final year of my Doctorate in Engineering, researching on "Batteryless sensor radio" under the supervision of Professor Hiroyuki Arai at Yokohama National University. Professor Arai, as we fondly call him, is very exceptional in that he is very generous at giving the researcher many chances to explore their ideas. This includes letting the researcher propose a research topic and decide how they do it. He is very kind to guide the researcher and ensures that the work is done correctly. In the event that Professor Arai decides the research topic, he still allows the researchers to follow their own methods as long as the methods are valid. This is a great motivation, especially for me as a foreign student, who is a dreamer and likes to try out my ideas. However, staying in Japan has never been without challenges.

A. Challenges upon arrival and while living in Japan

Coming to Japan was like a reminiscence of the dream of my youth. I thought for once that a door to the dreamer's world has been opened my way. However, staying in Japan has never been without challenges. The Japan I dreamt about and the Japan I came to know were actually like two different sides of a coin in many instances. On the technological front, by sight I could confirm what I had in my mind though I could not appreciate most of it due to the language barrier. I was overwhelmed to realize that without knowing Japanese, my appreciation of the whole experience was going to be minimal. At first I thought being enrolled in the Japanese language school was a drawback as I wanted to learn the language at my own pace while I concentrated on my engineering research. The tutor system helped a lot as I had a Japanese lab mate and tutor who used his electronic dictionary every time to help with my concerns. The compulsory language training was very necessary to equip me with the grammar essentials. With the grammar handy, I was able to use my intuition to create phrases and advance my communication skills with Japanese friends especially the lab mates. At first, I was never sure if the lab mates liked me, but when I started talking with them in some sort of "boro boro nihongo" (broken Japanese); I discovered that their interest was aroused. Suddenly like an avalanche breakdown I became friends with the lab mates and several other Japanese folk outside the university bounds. Today my lab mates and Professor Arai are more like a family to me. Please look at the photo in Fig. 2 and you might appreciate this. Japanese language, though difficult to learn, is essential to live in Japan. While I am not competent in writing and reading the Kanji script, my spoken Japanese is sufficient for me to be understood.



Fig. 2 Lab mates party, 2010.

B. Differences in culture

- *Honesty*: The Japanese are honest in the affirmative and sensitive in the other i.e. they will say yes when the answer is yes but, when the answer is no, the Japanese in general hesitate a lot. I think it is for their kind nature of not wanting to hurt the feelings of the other person (the inquirer). This is almost similar with Malawians. For a Malawian, when the answer is no, they may tell you: nkhaniyi ndaimva, ndiyeno, ndikuyimbirani kuti tilankhulane bwino bwino. Translated, this means that I have heard your

story/issue; I will make an effort to call you so we can talk about it nicely. It is highly unlikely that they will call you back as they are buying time and hoping that you will either forget it or the matter sorts itself out.

- *Speed of action:* The Japanese will try to do their duty as perfectly and as fast as possible. Generally in my culture, if you want something done, you have to be very patient to wait or risk having an imperfect job, if you hurry. We have a proverb, *kukana nsalu ya akulu nkuvika*, which in Japanese is, "嘘も方便" and in English: "circumstances may justify a lie." Generally, Malawians take their time. In the recent World survey for the fastest and the slowest, Malawi was voted slowest [2].
- *Competition:* Perhaps the major difference I found in Japan is that the Japanese never seem to compete against each other. They work as a team and achieve common goals. They never show aggression in their approaches. I had to moderate myself during class or research. In Malawi, the education system is British and encourages aggressive competition. One needs to appreciate that the resources are fewer as compared to Japan, so it is like the survival of the fittest in the Malawian society. The balancing factor is that Malawians are good at sharing. Those who have gladly share with those who have not. Where Japan outshines Malawi, and perhaps the whole world, is their perseverance. This beats my nerve. I have seen a level of unprecedented stoicism displayed by Japanese especially in their times of hardship or when they work towards an uncertain goal. The Japanese do not give up so easily. This is a challenge to me as the rewards from this perseverance are almost always exceptional.

3. Conclusions

I have introduced myself by focusing on my childhood dream. How I have survived to date has been spelled in black and white though briefly. My gratitude goes to the Institute of Electronics, Information and Communication Engineers (IEICE) Communications Society (CS) for giving me the chance to publish in this Global Newsletter. May similar chances be given to several other deserving foreign students and researchers for them to contribute to the IEICE Communications Society. My key plea is that IEICE should consider Africa as a region for membership. A good example is the Institute of Electrical and Electronics Engineers (IEEE) as it is seen as prestigious in Africa and has a large membership base including a number of student sections in several of the African countries.

4. Acknowledgement

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Chonzi (Administration and Human Resource Development Division, African Union Commission, Addis Ababa, Ethiopia).

5. Reference

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- [2] <http://www.ntv.co.jp/sekaju/onair/101023/01.html>



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

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

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

Additional Transactions of paper version (optional):

EA: Fundamentals EB: Communications EC: Electronics ED: Information and Systems
 A: Fundamentals (Japanese) B: Communications (Japanese) C: Electronics (Japanese) D: Information and Systems (Japanese)

Journal subscription (optional): (Japanese)

Remittance

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

Admission charge.....¥ _____	Journal subscription (optional).....¥ _____
Annual charge.....¥ _____	Mailing option: <input type="checkbox"/> Air mail.....¥ _____
Additional Society (optional)..... ¥ _____	<input type="checkbox"/> SAL mail.....¥ _____
Additional Transactions (optional).....¥ _____	Total¥ _____

Credit Card: UC Master Card VISA JCB American Express

Card number:

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Expiry date: _____ / _____ Credit Card Holder: _____ Signature: _____
 Year Month

Endorsement

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

I recommend this applicant for IEICE membership.

Endorser's name	Membership number	Endorser's signature	Date
-----------------	-------------------	----------------------	------

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

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

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

URL http://www.ieice.org/cs/member/sister_society.html

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

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

Sister Society membership information

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

Sister Society: IEEE ComSoc KICS VDE-ITG

Membership number (Member): _____

Copy of Membership certificate or Membership card:

(Attached here)

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

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

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

Personal Information

Male
 Female

Full name: _____ **Nationality:** _____

First name Middle name Last name

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

Day Month Year

Mailing Address Home Office

Name of Company/School/College Department/Section

Street City State/Province

Postal code Country

TEL FAX E-mail

Academic Background

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

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

Application Information

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

- Member
 - Student Member
 - Member (including Japanese Journal subscription)
 - Student Member (including Japanese Journal subscription)
- *Membership applies only to applicant who reside outside of Japan and who have non-Japanese citizenship.
◆ If you want to apply for OMDP (Overseas Membership Development Program), please check; OMDP

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

- B: Communications
- **Discount rate (see the URL below) is applied to this IEICE-CS Sister Society Member's application.
- URL http://www.ieice.org/cs/member/sister_society.html

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

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

Additional Transactions of paper version (optional):

- EA: Fundamentals EB: Communications EC: Electronics ED: Information and Systems
- A: Fundamentals (Japanese) B: Communications (Japanese) C: Electronics (Japanese) D: Information and Systems (Japanese)

Remittance

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

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

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

Additional Society (optional) ¥_____ SAL mail.....¥_____

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

Credit Card: UC Master Card VISA JCB American Express

Card number:

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

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

I recommend this applicant for IEICE membership.
(Director of Planning and Member Activities, IEICE-CS)

Endorser's name Membership number Endorser's signature Date

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

● Some thoughts on recruiting in Japan

Japan's academic year begins in April, and laboratories accept new bachelor students and the first year students of graduate school in this season. It is pleasure for faculty members to see them being full of curiosities and active at starting their research. On the other hand, many bachelor students are very busy with job hunting, usually from December in the previous year to the end of May or June. They are often troubled that they have few things to appeal to recruiters when they are asked "What did you accomplish in your college life?". Faculty members feel it is unfortunate that they have to decide their career before they are involved with bachelor research in earnest. Through bachelor research, their ability to create new things is enhanced by discussions with the supervisor, and also their skill of logical writing and presentations is improved. These experiences will help them to realize their own strengths (or weaknesses) and recognize what types of jobs they are suited to more clearly than before. We hope recruiting in Japan will change and it becomes more popular to recruit former graduates as several other countries in the world.

Notice: GLOBAL NEWSLETTER welcomes submission by the oversea members. Please see submission guideline at pages of 39 and 40 in this volume.

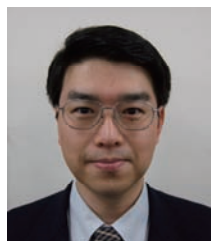
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Takao NAITO
Fujitsu Laboratories, Ltd.
Network Systems Laboratories
Director, Planning and Member Activities, IEICE Communications Society

IEICE-CS Conferences Calendar

Date	Conference Name	Location	Note
05 Mar. - 06 Mar. 2012	World Telecommunications Congress 2012 (WTC2012)	Miyazaki, Japan	Submission deadline: July 15 2011
28 Nov. - 01 Dec. 2011	29th AIAA International Communications Satellite Systems Conference (AIAA ICSSC-2011)	Nara, Japan	Submission deadline: May 3 2011
25 Oct. - 28 Oct. 2011	2011 International Symposium on Antennas and Propagation (ISAP2011)	Jeju, Korea	Submission deadline: May 15 2011
04 Oct. – 07 Oct. 2011	15th International Conference on Convergence in Services, Media and Networks (ICIN2011)	Berlin, Germany	Submission deadline: closed
08 Aug. - 10 Aug. 2011	EEE International Workshop on Electromagnetics: Applications and Student Innovation Competition (IEEE iWEM2011)	Taipei, Taiwan	Submission deadline: closed
02 Aug. - 04 Aug. 2011	The 2011 International Conference on Advanced Technologies for Communications (ATC2011)	Da Nang City, Vietnam	Submission deadline: closed
31 Jul. – 05 Aug. 2011	International Geoscience and Remote Sensing Symposium 2011 (IGARSS2011)	Sendai, Japan	Submission deadline: closed
04 Jul. - 08 Jul. 2011	16th Opto-Electronics and Communications Conference (OECC2011)	Kaohsiung, Taiwan	To be held soon
04 Jul. 2011	16th Opto-Electronics and Communications Conference (OECC2011-WSII)	Kaohsiung, Taiwan	To be held soon
29 June. - 01 Jul. 2011	The 10th International Symposium on Autonomous Decentralized Systems (ISADS2011)	Kobe, Japan	To be held soon
05 June - 09 June 2011	4th International Workshop on the Network of the Future (FutureNet IV)	Kyoto, Japan	To be held soon
05 Jun.- 09 Jun. 2011	International Conference on Communications 2011 (ICC2011)	Kyoto, Japan	To be held soon
01 Jun. - 03 Jun. 2011	Korea-Japan Workshop on Beyond 100G (KJWS- B100G)	Jeju, Korea	To be held soon
31 May. - 03 Jun. 2011	Cognitive Radio Oriented Wireless Networks and Communications (CrownCom2011)	Yokohama, Japan	To be held soon
19 May. - 20 May. 2011	The 3rd Sarajevo Technology Forum 2011 (STF2011)	Sarajevo, Bosnia and Herzegovina	To be held soon
15 May. - 19 May. 2011	21st International Conference on Optical Fiber Sensors (OFS-21)	Ottawa, Canada	To be held soon
27 Mar - 30 Mar. 2011	The 5th International Symposium on Medical Information and Communication Technology (ISMICT 2011)	Montreux, Switzerland	Done
26 Jan. - 28 Jan. 2011	The 25th International Conference on Information Networking (ICOIN2011)	Kuala Lumpur, Malaysia	Done
10 Dec. 2010	3rd International Workshop on the Network of the Future (FutureNet III)	Miami, USA	Done

*: Please confirm with the following IEICE-CS web site for the latest information.

<http://www.ieice.org/cs/conf/calendar.html>

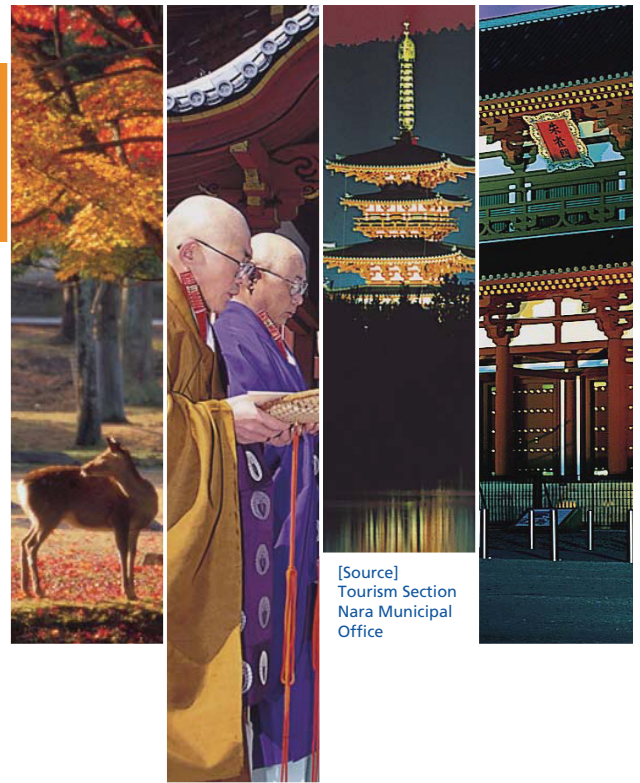
29th AIAA International Communications Satellite Systems Conference (ICSSC-2011)

Broadband Bridge to Asia Pacific

28 November-1 December 2011 Nara, Japan

<http://www.ilcc.com/icssc2011/>

The 29th AIAA International Communications Satellite Systems Conference (ICSSC-2011) will be held 28 November - 1 December at Hotel Nikko Nara, Nara Prefecture, Japan. In Nara, an ancient capital of Japan in the 8th century, you will experience breathtaking beauty in autumn colors behind Buddhist temples in one of the most pleasant months in Japan. The ICSSC-2011 will explore the state-of-art satellite communications technologies and satellite-based global broadband services to solve social, economic and environmental problems not only in the U.S. and Europe but also in Asia-Pacific countries.



[Source]
Tourism Section
Nara Municipal
Office

CALL FOR PAPERS

Scope

Papers are being solicited in the following areas, but not be limited to the following topics:

- Advanced communication techniques
- Advances in payload subsystems and architectures
- Antennas and propagation
- Communications and network protocols and interoperability
- Advanced in earth terminal systems
- Integrated services for disaster relief
- Integrated services for remote medicine and remote access to medical records
- Interactivity via satellite
- Mobile broadband communications – Land, sea and air
- Military and dual use system and applications
- Rapid response payloads
- Regulatory and spectrum sharing issues
- Launch vehicles – Update
- Earth observation systems and applications

Colloquium

Pre-conference colloquium will be held on 28 November, chaired by Prof. Masahiro Umehira, Ibaraki University. Main theme is "Integration and collaboration of satellite and terrestrial systems toward ubiquitous networks". Integration and collaboration of satellite and terrestrial systems will be overviewed as well as current satellite mobile systems and services.

Paper Submission

Submission of an extended abstract with a minimum of 600 words will be accepted electronically on the web page of AIAA ICSSC-2011 (www.aiaa.org/events/icssc). The deadline for receipt of abstracts via electronic submission is 3 May 2011. Authors having trouble submitting abstracts electronically or those with questions should e-mail AIAA technical support at paper_tech_support@aiaa.org.

Important Dates

- **Abstract Deadline:** ~~3 May 2011~~ **1 June 2011 Extended**
- **Author Notification:** **1 July 2011**
- **Final Manuscript Deadline:** **1 October 2011**

Organized by AIAA Communications Systems Technical Committee (CMSTC)
AIAA Japan Forum on Satellite Communications (JFSC)
Tokyo Metropolitan University

Supported by International Exchange Program of National Institute of Information and Communications Technology (NICT)

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AIAA
The World's Forum for Aerospace Leadership



Telecommunications - The Infrastructure for the 21st Century
World Telecommunications Congress 2012
incorporating ISS and ISSLS

March 5-6, 2012 Miyazaki, Japan
<http://www.wtc2012.jp>



Call for Papers

Telecommunications is the major enabler of new ways of working in the 21st Century. There have been dramatic changes in network architecture, service capabilities, and business models in response to emerging needs and applications. The World Telecommunications Congress (WTC) brings together leading experts from industry, academia and government to map out the future requirements for telecommunications technologies, applications and policy.

WTC builds on the traditions of quality, timeliness and open interaction from its origins in the ISS (International Switching Symposium) and ISSLS (International Symposium on Services and Local Access). Authors are cordially invited to submit papers to WTC 2012, to be held in Miyazaki, Japan. Particularly relevant topics for papers are suggested below:

Topics

Network and Technology development

- Data and network security
- Fixed and mobile access networks
- Future Internet
- Mobile ad-hoc, mesh and sensor networks
- Network and service management
- Next Generation Networks
- Optical networks for access, metro and core networks
- Cloud/Grid computing
- Quality of Service and traffic control
- The impact of data traffic explosion

Emerging Business Models

- Economics of new generation services
- Green Telecoms
- Smart Government, Smart Health, Smart Learning
- Closed loop health care
- Vertical applications in different business areas

Green and Sustainability

- Green Telecoms, Technologies, Architecture
- Energy Efficient Network Architecture
- Breakthrough Technologies for Energy Efficient Network
- ICT Business Models for Energy Reduction
- Efficient Use of ICT for Ecological and Sustainable Society

Applications & Services

- Service development & deployment
- Ambient Assisted Living networking solutions and services
- Cloud/Grid services
- Fixed-Mobile convergence
- New video communications and content distribution
- Social networking and multimedia services
- Immersive communications platforms
- Gaming architectures
- Smart Grid, Smart City
- Digital information preservation and retrieval

Regulatory and Policy Issues

- Telecommunications as a productivity enabler
- Bridging the Digital Divide
- Network neutrality
- Networking solutions for critical infrastructures
- Next-generation voice regulation
- Privacy & personal security
- Spectrum issues and the Digital Dividend
- Standardization strategies

Important Dates

- Paper submission : 15 July 2011
- Acceptance notification : 30 September 2011
- Camera ready due : 18 November 2011
- Conference : 5-6 March 2012

Conference Venue

Phoenix Seagaia Resort, Miyazaki, Japan
http://www.seagaia.co.jp/index_en.html

Sponsor : IEICE Communications Society

Technical Sponsorship : VDE/ITG, IEEE Communications Society



Submissions and Selection Criteria

Authors are invited to submit either full papers or short papers describing original, previously unpublished work, not currently under review by another conference or journal, addressing a novel aspect of the topic. All papers will be peer-reviewed, accepted papers will appear in the conference proceedings and will be listed in IEEE Xplore.

Full technical papers may be no longer than 6 pages. Short business application papers are primarily intended for work in progress or contributions on recent trends and issues. They should be no longer than 3 pages and should provide a succinct summary of the author's contribution.

Papers must be submitted electronically via EDAS (<http://www.edas.info>) and must conform to the templates available on the conference website.

All submissions will be assessed on the basis of quality, novelty and relevance to the conference themes. Acceptance of a paper and publication in the proceedings are conditional on at least one author registering at the full rate and presenting the paper at the congress.

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Kou Miyake, NTT, Japan

Chairman of WTC Council

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IEICE

Communications Society — **GLOBAL NEWSLETTER** —



VOL.35 NO.2

June 2011

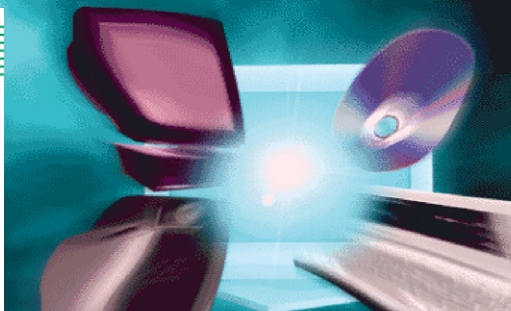


IEICE
Communications Society

A PUBLICATION OF THE COMMUNICATIONS SOCIETY
The Institute of Electronics, Information and Communication Engineers

To Probe Further and Keep Up-to-date with Communication Technologies

IEICE Communications Society



It Survived Great Earthquake Disaster



Electrical Engineering Milestone: Directive Short Wave Antenna, 1924



After the Great Tohoku Earthquake on March 11, 2011, the Electrical Engineering Milestone “Yagi-Uda antenna” qualified by IEEE in 1995 has still no damage, which has been exhibited in Tohoku University in Miyagi Prefecture, Japan. With a lot of help and support from all over the world, Japanese Scientists, Researchers and Engineers now go back to the basics, and progress toward recovery and reconstruction. (a related article is included in this issue)

