IEICE Communications Society GLOBAL NEWSLETTER *Vol. 22*
Contents

Report of the ICICE-CS Annual Assembly

Masugi Inoue
Director of General Affairs

1. Introduction

The IEICE Communications Society Annual Assembly was held on September 11 in a Faculty of Agriculture lecture room at Tottori University in conjunction with the IEICE Society Conference held on the university campus from September 10 to September 14, 2007.

The weather that day was fine, and a strong afternoon sun shone on the reception desk in the corridor in front of the lecture room, making the room a little stuffy. Despite that, eighty-four people including the winners of awards attended the assembly. Dr. Miki Hirano, Director of General Affairs, started the conference at 3:00 pm, and Professor Susumu Yoshida, President of Communications Society, gave the opening speech.

2. Special Lecture

Next, Mr. Shuichi Inada (Vice President, National Institute of Information and Communications Technology) gave a special lecture entitled, "Future Directions of Research and Development Envisioned from Information and Communication Growth Trends."

He explained that strategic research and development should be performed, and to accomplish this, it is important to implement logistics for properly recognizing market development and technological trends including intellectual property rights and standardization to be able to quickly and decisively conduct research and development. As growth trends, he described the rapid growth of Internet traffic, progress in information sensing technologies, and the ubiquitous use of electronic devices, among others. He also presented such current problems as the limitations of the existing Internet, the increase of serious information security breaches, and the growth in power consumption by electronic devices.

Based on these trends and problems, Mr. Inada explained the importance of a management level initiative for maintaining a strategic R&D roadmap of intellectual property rights and international standardization, the promotion of personnel training, the preparation of testbeds and promotion of experimentations on them, and the visualization of the fruits of innovation (If you can't measure it, you can't manage it). Also, as a specific example at the research and development level, he introduced the recently started research and development of the New Generation Network, which corresponds to the next generation of the Internet and Next Generation Network (NGN) in the field of network research.

In conclusion, he stated that although Japan's strengths are in its manufacturing and advanced, sophisticated markets, its weaknesses are insufficient sense of cooperation between management and technology, and insufficient personal connections beyond an organizational framework. Therefore, he proposed that we should link together the results of innovation by enhancing technological portfolios and management, accelerating technological development, appropriately assessing technologies, and increasing interactions between marketing and research and development through the strengthening of management, creation of open organizations, and the exchange and training of personnel. Mr. Inada's speech was full of helpful suggestions based on his long experience of participating in the information and communication policy making at the Ministry of Internal Affairs and Communications.

3. Presentation of Awards and Fellowships

The second half of the conference was the ceremony for presenting awards and fellowships. The recipients appeared one by one at the podium to receive their awards from President Susumu Yoshida.

First, the Communications Society Outstanding Contributions Awards were presented to twelve persons (three persons attended the ceremony), who had been retired after serving the Communications Society as the Chair of a Technical Committee or as the Editor-in-Chief of an Editorial Committee for more than one year. Next, the Communications Society Distinguished Contributions Awards were presented to fifty-eight members (twenty-six persons attended the ceremony), who made significant contributions to the Communications Society by planning or engaging in the society work or by making reviews of many transactions papers.

The IEICE Communications Society Excellent Paper Awards were presented next. First, Best Paper Awards for papers written in Japanese were presented to the authors of three papers, and a Best Tutorial Paper Award was presented to the author of one paper. Then, Best Paper Awards for papers written in English were presented to nine authors of two papers, Best Letter Awards were presented to three authors of one letter, and Best Tutorial Paper Awards were presented to five authors of three invited papers. Finally, the IEICE Fellowships were presented to twenty-four individuals (nineteen persons attended the ceremony). On behalf of all the recipients, Professor Fumiyuki Adachi of Tohoku University, who has received the IEICE Fellow

certificate, expressed his deep appreciation for the award and promised his further contribution to the IEICE-CS activities.

Professor Kenichi MASE, President-Elect of Communications Society, concluded the Annual Assembly with greetings.

4. Conclusion

It was a matter of great pleasure that the IEICE awarded a fellowship to Professor Zhisheng Niu of Tsinghua University, China, in recognition of his Contributions to Network Engineering and IEICE International Activities. We expect the activities of the Communications Society to become increasingly globalized in the future and believe that the number of awards and fellowships granted to overseas members will increase.

Mr. Inada of NICT presenting the Special Lecture

Participants in the Annual Assembly

Prof. Adachi of Tohoku Univ. receiving a Fellowship

Opening Greeting by Society President Susumu Yoshida

Concluding Greetings by President-Elect Kenichi Mase

Report on Panel Session "Structure and Operation of Backbone Networks" at the IEICE Society Conference 2007

Hajime Nakamura
KDDI R&D Laboratories Inc.

1. Introduction

At the IEICE Society Conference, Tottori University, September 10-14, 2007, the technical committee on PN (Photonic Networks) [1] organized the panel session "BP-2 Structure and Operation of Backbone Networks". The scope of this session is to discuss the current and future of backbone networks from various viewpoints. Discussion topics include architecture, operation, technologies, products and standardization, which are related to backbone networks being more broadband, functional and reliable. This session is organized in two parts, invited talks and panel discussion. Panelists form network operators, vendors, a research institute and a university made presentation and discussion before a roomful of audiences. This article presents an overview of the invited talks and the panel discussion.

2. Invited Talks

The seven distinguished experts were invited as panelists and made their presentation in sequence. The valuable talks are summarized as follows;

- Panelists from operators:
  - BP-2-1 Mr. Tomoya Yoshida (NTT Comm.)
  - BP-2-2 Mr. Kei Enomoto (KDDI) presented the
  - BP-2-3 Mr. Satoshi Matsushima (Softbank Telecom)

  These three panelists are engaged in planning and operation of their practical backbone networks. The current status and the future plans are explained from perspective of each operator.

- Panelists from vendors:
  - BP-2-4 Mr. Soichiro Araki (NEC)
  - BP-2-5 Mr. Shinji Nishimura (Hitachi)

  Mr. Araki reported a trend of optical IP network technologies focusing on realization of NGN networks. Mr. Nishimura presented a trend of Ethernet technologies including the status of standardization activities related to 100G/40Gbps interfaces.

- Panelists from a research institute and a university:
  - BP-2-6 Mr. Tetsuya Miyazaki (NICT)
  - BP-2-7 Mr. Satoru Okamoto (Keio Univ.)

  Mr. Miyazaki introduced the state of the art in highly efficient transmission technologies for backbone networks. Mr. Okamoto offered his perspective on the direction of Layer 1 and Layer 2 technologies towards the next generation backbone networks.

Regarding some of these talks, their Japanese presentation materials that are partially in English are uploaded on the home page of the PN technical committee [1].

3. Panel Discussion

The panel discussion was opened with introductory comments from panelists regarding a perspective on backbone networks. The panelists from operators, Mr. Yoshida, Mr. Enomoto and Mr. Matsushima, presented some distinctive points in architecture and operation of each of their practical backbone networks and furthermore mentioned their needs for products equipped as backbone network node facilities. Following them, Mr. Araki and Mr. Nishimura explained the situation of product development in response to the needs of operators. Towards the future backbone networks, Mr. Miyazaki and Mr. Okamoto pointed out some key transmission technologies such as DQPSK and 16QAM and some functional directions including a sample guideline of the necessary quality of transmission, respectively. All of the panelists expressed their opinions and answered questions from audience. Various issues related to backbone networks were discussed in this part.

4. Conclusion

Through the invited talks and the panel discussion, we can see the current of backbone networks including some features of Japanese representative operators and the actual state of product development. Furthermore, based on a perspective on the key technologies and functional requirements, this session provides a direction of the future backbone networks.

Finally, as the organizer and the chairperson of this session, I would like to express my appreciation to all panelists and participants. Particularly I would like to thank to the sub-organizer, Mr. Naoya Wada (NICT) and the PN technical committee members, Mr. Wataru Imajuku (NTT) and Mr. Soichiro Araki (NEC) for their every effort in organization of this session.

5. Reference

[1] http://www.ieice.org/~pn/jpn/

"Technological Trends in WiMAX"
A Report on the Tutorial Lecture Session

Keizo SUGIYAMA (KDDI R&D Laboratories. Inc.)
Seishi HANAOKA (Hitachi, Ltd.)
Toshiyuki KUZE (Mitsubishi Electric Corporation)
Michiharu NAKAMURA (Fujitsu Laboratories Ltd.)
Takashi SHONO (Intel K.K.)

1. Introduction

WiMAX, Worldwide Interoperability for Microwave Access, has been attracting an attention as a Broadband Wireless Access (BWA) technology for Wireless Metropolitan Area Network (WMAN) under the IEEE 802.16 standards. The IEICE Communication Society held a lecture entitled "Technological Trends in WiMAX" as part of tutorial sessions at the 2007 IEICE Society Conference held at Tottori University on September 11. This article reports an overview of the session.

2. Session Program

We had 4 lectures for the tutorial session after Keizo SUGIYAMA (KDDI R&D Laboratories Inc.) introduced circumstances surrounding WiMAX. They are summarized as follows.

BT-2-1: Technical Overview of IEEE802.16

Seishi HANAOKA (Hitachi, Ltd.) lectured the specification of physical and MAC layers of IEEE 802.16e, which is a basis of Mobile WiMAX, in addition to giving a brief overview of the relationship between IEEE 802.16 Working Group (WG) and WiMAX Forum, and standardization activity in 802.16 WG. 802.16e is an amendment to 802.16-2004 for extending capability for mobility. He explained technical features of 802.16e such as Multiple Input Multiple Output (MIMO), scalable Orthogonal Frequency Division Multiple Access (OFDMA), handover and Idle mode/Sleep mode those are added to support mobility.

BT-2-2: Standardization activity in IEEE802.16m

Toshiyuki KUZE (Mitsubishi Electric Corporation) introduced recent topics of standardization activities in IEEE 802.16m, which amends the IEEE 802.16 WirelessMAN-OFDMA specification to provide an advanced air interface for operation in licensed bands and will also meet the cellular layer requirements of IMT-Advanced to be developed in ITU-R. This amendment will provide continuing support for legacy WirelessMAN-OFDMA equipment. MIMO is one of the key technologies to realize the requirements. Comment resolution process on system requirements and evaluation methodology are still continuing. He mentioned that a new work on a system description document would be initiated shortly and become important.

BT-2-3: Technical Overview of IEEE802.16j

Michiharu NAKAMURA (Fujitsu Laboratories Ltd.) explained the technologies included in the 802.16j/D1, which enhances coverage and throughput by multi-hop relaying in 802.16 networks. 802.16j specifies functionalities of Relay Stations (RSs) and base stations and introduces new schemes in frame structure, HARQ, macro-diversity for the operation in relay environment. This project was established by the proposal from Japan and is expected to be completed in the first half of 2008.

BT-2-4: Latest Update of WiMAX Forum

Takashi SHONO (Intel K.K.) presented organization, membership, recent activities in WiMAX Forum. It was announced that WiMAX Forum launched Japan Office in June 2007 and he was appointed Vice Director of Operations for Japan Office. The objective of WiMAX Forum is to promote deployment of WiMAX networks globally by certifying interoperability of WiMAX-compliant products. To date, there are several Mobile WiMAX certification profiles for each of the 3 different frequency bands – 2.3 GHz, 2.5 GHz and 3.5 GHz. Among these, the 2.5 GHz band has been allocated in much of the world. The number of WiMAX Forum members is almost 500 as of August 2007.

Acknowledgement

This tutorial session had a great success with over 70 participants. The program was planned and supported by IEICE Technical Committee on Communication Systems (CS). We would like to appreciate them.

Report on the Symposium Session in the 2007 IEICE Society Conference -BS-10: Network Planning, Control, and Management-

Kiminori Sugauchi*, Hiroshi Kuriyama**
* Organizer of the session, Hitachi, ** Chair of IEICE TM, NEC

1. Introduction

The 2007 IEICE Society Conference was held at Tottori University from 10th to 14th, September. At the conference, a symposium session, "Network Planning, Control, and Management", was held from 13th to 14th, September as an English session.

Even though English papers can be submitted to any sessions, the IEICE technical committee on Telecommunication Management (TM) continuously plans the English session for network management in the society conference every year in order to achieve active discussion in English. A lot of papers were presented in the previous English sessions.

2. Symposium session of Network Planning, Control and Management

19 papers were presented in the session this year. There were many kinds of topics in the area of network management, e.g. wireless/ad-hoc network, traffic monitoring, network security, sensor networks, and network management architecture. Fig.1 shows one of the presentations. Active discussion was held with a lot of questions from attendees (Fig. 2). Some people continued the discussion even in the break time.

Because of the English session, many international presenters attended. In fact, the 12 papers were presented by international students or employees belonging to Japanese universities or companies. We think that it was very good opportunity for participants to have international discussion.

3. English Session Award of TM Committee

Technical Committee on Telecommunication Management(TM) has been offering the "English Session Award" to the excellent authors presented at TM hosted English sessions of IEICE Society Conference and General Conference. This year's awardees will be selected and commended at the TM workshop on March 2008. The papers listed in Table 1 were presented in the English session last year and received the award last March.

4. Conclusion

This year's symposium session organized by TM attracted many speakers and audiences. We believe that the presentations and the discussion provide fruitful results for research and development on Network Planning, Control, and Management.

Fig. 1 Presentation

Fig.2 Discussion

Table 1 Awardees of English Session Award of TM Committee in 2006

Awardees	Title
Kensuke Kokubun (Tokyo Denki Univ.)	Study on a Distributed File Data Backup System in Grid Computing Environments
Galy Lee (Waseda Univ.)	A Two Stage Heuristic Topology Design Approach for WDM Grid Computing Networks
LE The Quyen (Waseda Univ.)	Network Anomaly Detection and Identification

Report on ISAP2007

Takeshi Manabe* and Yoshihiko Konishi
*Osaka Prefecture University, **Mitsubishi Electric Corporation

1. Introduction

The 2007 International Symposium on Antennas and Propagation (ISAP2007) was held at the Niigata Convention Center "TOKI MESSE" in Niigata, Japan, from August 20 through August 24, 2007 (Fig. 1). This Symposium, the 12th ISAP, is sponsored and organized by the Institute of Electronics, Information and Communication Engineers (IEICE) and is held in cooperation with the International Union of Radio Science (URSI), the Antennas and Propagation Society of the Institute of Electrical and Electronics Engineers (IEEE/APS), the Antennas and Propagation Professional Network of the Institution of Electrical Engineering and Technology (IET), and the Korea Electromagnetic Engineering Society (KEES) (Fig. 2).

Fig. 1 Niigata Convention Center “TOKI MESSE”

2. Statistics

- Number of papers presented: 364 papers including 5 invited papers and 77 poster session papers. The percentage of overseas papers was 45%.
- Number of participants: 625 from 35 countries. The percentage of overseas participants was 36%.

3. Sessions and Contents

Technical sessions started with plenary talks "Toward ubiquitous network society" by Mr. Yoshiyuki Takeda of Mobile Radio Center and "Polarimetric Radar Remote Sensing" by Prof. Yoshio Yamaguchi of Niigata University. There were 62 oral sessions and a poster session which includes 16 finalists of Student Paper Contest. These sessions covers the fields of antennas, propagation, electromagnetic wave theory, and related fields including progress in basic topics of broadband/Multi-band antenna design as well as the latest topics focused in the Special topics, such as metamaterials and systems study such as MIMO/Ubiquitous, etc.

Invited Talks

Five invited talks that cover hot topics in radar remote sensing, antennas for ubiquitous, mobile, MIMO, and on-body communication systems. The titles and speakers are listed below:

- ✓ *Recent Advances in Polarimetric and Interferometric Radar Remote Sensing, W.-M. Boerner, Univ. of Illinois at Chicago, USA.*
- ✓ *Antennas for Ubiquitous Sensor Network, Y. J. Yoon, Yonsei Univ., Korea.*
- ✓ *Antenna Design and Channel Characterization for Mobile MIMO Systems, M. A. Jensen, Brigham Young Univ.. USA.*
- ✓ *Small Terminal Antennas for Mobile Applications: General Design Considerations and Some Specific Examples, J. R. Mosig, EPFL, Switzerland.*
- ✓ *On-body Antennas and Propagation: Recent Development, Yang Hao, Univ. of London, UK.*

Luncheon Session

A luncheon session was organized to discuss and exchange ideas world-wide about the EM education focusing upon the graduate courses such as Master and/or Doctor courses with 5 panelists after the plenary sessions (Fig. 3).

Fig. 2 Opening Ceremony

Fig. 3 Luncheon Session

Awards

The ISAP2007 Paper Award is awarded to 5 outstanding papers as follows:

- ✓ *Measurement Based Parametric Channel Modeling Considering Diffuse Scattering and Specular Components, Markus Landmann*, Martin Kaeske*, Reiner Thoma*, Jun-ichi Takada†, and Ichirou Ida‡, *Ilmenau Univ. of Tech., Germany, †Tokyo Tech., Japan, ‡Fujitsu Limited, Japan.*
- ✓ *E-Polarized Diffraction by Dielectric Wedge, Se-Yun Kim, Korea Inst. of Sci. & Tech., Korea.*
- ✓ *A Variable Phase Shifter Using a Movable Waffle Iron Metal and Its Applications to Phased Array Antennas, Hideki Kirino*, Koichi Ogawa†, and Takeshi Ohn†, *Panasonic Shikoku Electronics Corp., Japan, †Matsushita Electric Industrial Corp., Japan.*
- ✓ *Metamaterial-Based and Metamaterial-Inspired Efficient Electrically Small Antennas: Designs, Simulations and Experiments, Richard Ziolkowski and Aycan Erentoka, Univ. of Arizona, USA.*
- ✓ *Beam-Scanning Performance of Leaky-Wave Slot Array Antenna on Variable Stub-Loaded Left-Handedwaveguide, Takaoki Ikeda, Kunio Sakakibara, Toru Matsui, Nobuyoshi Kikuma, and Hiroshi Hirayama, Nagoya Inst. of Tech., Japan.*

Poster Presentation Award is awarded to 4 posters presented at the Poster Session according to a ballot from the audience during the session:

- ✓ *DOA Estimation of Coherent Waves by Using Spatial Smoothing Preprocessings in Transmitter, Natsumi Endo, Hiroyoshi Yamada, Yoshio Yamaguchi, Niigata Univ., Japan.*
- ✓ *Inkjet-printed Antennas on Paper: Are They the Ultimate Solution for UHF Ubiquitous Cognitive-intelligence RFID-enabled Applications?, Manos Tentzeris, Li Yang, Amin Rida, Anya Traille, Rushi Vyas, Terence Wu, Georgia Tech., USA.*
- ✓ *Modeling of RF Transmission Through Buildings Using MOM Based Semi-deterministic Approach, Kashif Mahmood, Junaid Muhammad Mughal, Rafiq Gulzaib, GIK Inst. of Engineering Sciences & Tech., Pakistan.*
- ✓ *Asymptotic Analysis of a Wearable Device Attached to the Human Body by Using Sommerfeld Integral, ChangYong Seo, Masaharu Takahashi, Koichi Ito, Chiba Univ., Japan.*

In order to foster activities of students toward highly qualified researchers, ISAP2007 hosts the Student Paper Contest. Among 16 finalists, 5 winners were selected as awardees:

- ✓ *Tomo Fukami, Osaka Prefecture Univ., Japan,*
- ✓ *Alireza Foroozesh, Univ. of Manitoba, Canada,*
- ✓ *ChangYong Seo, Chiba Univ., Japan,*
- ✓ *Andreas Danklmayer, DLR, Germany,*
- ✓ *Yuki Hayashi, Nagoya Inst. of Tech., Japan.*

4. Social Programs

Participants and accompanying persons enjoyed Banquet with various kinds of locally-brewed sake (Fig. 4), Technical Tour visited Niitsu Rollingstock Manufacturing of East Japan Railway Company. To entertain participants and accompanying persons, several tours which include Shirone Odako Museum, Northern Culture Museum, and Sado Island Tours, as well as Morning Tennis Tournament were held as Social Programs.

Fig. 4 Banquet at Hotel Niigata

5. Next ISAP

The next ISAP, ISAP2008, is scheduled to be held in Taipei, Taiwan, from October 27 to October 30th, 2008. The ISAP2007 Flag was handed over to Prof. Dau-Chyrh Chang, the Chair of ISAP2008, from Prof. Makoto Ando, the Chair of ISAP2007, at the Closing Ceremony (Fig. 5).

Don't miss to attend the next ISAP in Taipei!!

Fig. 5 Closing Ceremony

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

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From Editor's Desk

Merry Chiristmas

Christmas is coming soon. In this season, you can see illumination and the Christmas tree here and there of the town in Japan. It was not seen mainly to several years ago that illumination is decorated with private house, however here several years, the house which decorates luxurious illumination like the European-American houses increased. In recently, Christmas decoration is seen throughout the city even the end of November. In Japan, people enjoy the Christmas mood about one month before the Christmas. It is quite early to decorate Christmas goods any other countries in the world. In addition, in Europe and America as for Christmas Eve, it is usual to spend with the family, but in Japan to spend with the sweetheart and the friends is also common other than the family. Spending with family in New Year is quite popular rather than in Christmas in Japan. In any case, there is no doubt that Christmas is a special day for Japanese. How will you spend Christmas of this year? Will you write a paper for IEICE General Conference???

IEICE Global News Letter Editorial Staff

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No special order is observed

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Call for Papers

Special Section on

Emerging Technologies for Practical Ubiquitous and Sensor Networks

The IEICE (Institute of Electronics, Information and Communication Engineers) Transactions on Communications announces a forthcoming special section on Emerging Technologies for Practical Ubiquitous and Sensor Networks to be published in **November 2008**.

Ubiquitous and sensor networks are expected to be innovative technologies to provide attractive applications in the upcoming ubiquitous or pervasive computing era. Although a variety of new technologies are proposed, most of the challenges are still on the research phase and killer applications are unclear. Therefore, it is the time that we researchers and developers discuss how our research results can be applied to practical systems and applications.

The purpose of this special section is to offer an opportunity to present a wide variety of emerging technologies for ubiquitous and sensor networks, ranging from the fundamental theories and the component technologies to the platforms. Your contribution to this special section would be greatly appreciated.

1.Scope

Suggested topics include but are not limited to the following areas concerning practical ubiquitous and sensor networks:

Fundamental Theories: Information theory, Communication theory, Signal processing, Control theory, Distributed information processing and control, etc.
Component Technologies: Information fusion, Data mining, Databases, Network topology, Resource management, Protocol design, Sensor localization, RF tags, Security and privacy protection, Context-aware technology, Auto-configuration, Mobility support, etc.
Platforms: Devices and appliances, RFID, Power-saving devices, Optimal design for low-EMI, Compact devices, System control and management, Key software technology, Middleware, Smart space, etc.
Applications: Disaster relief, Entertainment, Environmental measurement, Automatic system control, Living support, Medical support, Context-aware applications, Location-aware applications, Real-world oriented applications, Robots, etc.

2. Submission Instructions

The deadline for submission is **February 22, 2008 (JST)**. Manuscript should be prepared according to the guideline given in the "Information for Authors". The latest version of it is available at the web site, http://www.ieice.org/eng/shiori/mokuji_cs.html, or you can refer its brief summary attached to IEICE Transactions. The length of the paper should not exceed 8 printed pages in principle. The term for revising the manuscript after acknowledgement of conditional acceptance for this special section could be shorter than that for other issues (60 days) because of the tight review schedule. In this special section, only the electric submission is adopted. Prospective authors are requested to follow carefully the submission process described below.

1. Submit papers using the IEICE Web site https://review.ieice.org/regist_e.aspx. Authors should choose the [Special-EB] Emerging Technologies for Practical Ubiquitous and Sensor Networks as a "Type of Issue/Category of Transactions" on the online screen. Do not choose [Regular-EB] Communications or other special sections.

2. "Copyright Transfer and Page charge Agreement" and "Confirmation Sheet of Manuscript Registration" must be sent by postal mail to the following address. Please mark "Special section on Emerging Technologies for Practical Ubiquitous Sensor Networks" on the envelope. We cannot start the review process without them, even if we receive the manuscript.

3. Please note that editorial committee will strictly keep the deadline for paper submission.

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