IEICE Communications Society GLOBAL NEWSLETTER *Vol. 2*
Contents

Free Viewpoint Television
－FTV－

Masayuki Tanimoto
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I have been working in the field of "compression" and "processing" of visual information. It had been a long dream of the human to see distant scenes in real time. Television realized it and has been making a great influence on our life. Television is one of the most important inventions in the 20th century.

Today, most people regard television as a matured technology. However, there is still a large room for television to be developed further. For example, the present television gives us only a limited view of a real world we want to see. This view is determined by the position and direction of a TV camera in a distant location. We can't determine the view by ourselves. This is quite different from the way we get visual information with our eyes. We get a variety of visual information freely by changing our viewpoint in the real world.

We are developing a new television system where we can view a distant 3D space freely as if we were there. We named it the Free Viewpoint Television (FTV).

Social infrastructure in the future should be constructed with many sensors such as cameras built in for a secure and reliable society. These sensors are connected to the communication network and all information from the sensors can be accessed. How shall we utilize many images from the spatially distributed cameras? It's not a good way to show us these images at the same time or to show us each image one by one. The idea is to generate a new image

The FTV is one of the systems based on this idea. Visual information of 3D space can be captured as a large number of different view images. However, the cost of acquisition, transmission and storage of view images is proportional to the number of views. Therefore, free viewpoint images are generated by "processing" of small number of real view images in the FTV.

We constructed a prototype of FTV using CCD cameras and PC cluster as shown in Fig.1. 16 CCD cameras are set at each vertex of triangular patches, that compose a hemisphere dome over a diorama. One twenty-fourth size of miniature car moves on the diorama.

The function of FTV was successfully demonstrated by generating bird's eye view images of the moving car in real time. Some of real images captured by the cameras and a generated free viewpoint image are shown in Fig.2.

The FTV needs many new technologies such as "compression" of view images. I'll be very happy if the readers of this newsletter get interested in the FTV and challenge the development of new technologies.
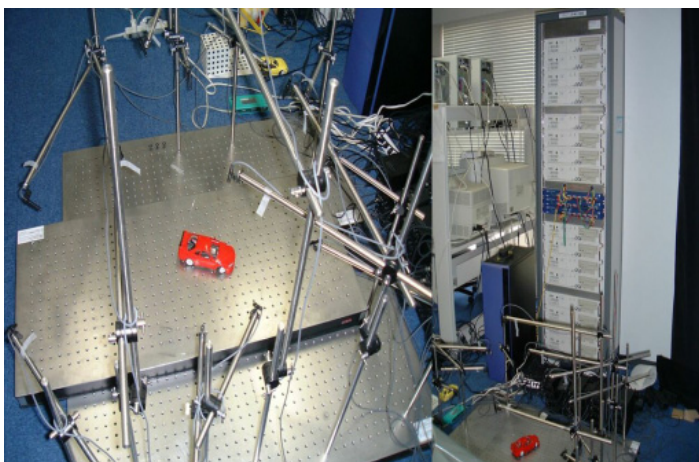

Fig.2 Free viewpoint image generated by processing of real images

Fig.1 Prototype of FTV

unifying all the visual information for better human understanding.

OECC and Optical Communication
- Past and Future -

Mikio TAKAHARA (IEICE Fellow)
YAMANASHI Eiwa College

I recently received a request from Dr. YAMANAKA of NTT Network Innovation Laboratories to issue a report for OECC describing the real situation of optical communication systems. I accepted the request without thinking deeply enough. During my recent move from Yamanashi University to YAMANASHI Eiwa College, I failed to keep most of my background papers and documents. In spite of the loss, I accepted his request. It follows that this report is based on my recollections and thus must be read with that in mind.

OECC stands for the OptoElectronics and Communication Conference. This conference was planned to be a pre-eminent optoelectronics and communication conference for Japan, East Asia and the Circum-Pan-Pacific region, and its role models were OFC in the North American region and ECOC in the European region. The first conference was held in July 1996 at MAKUHARI Messe.

The year of 1996 was a memorable one in which to hold the first of a series of optoelectronics and communication conferences because some remarkable techniques such as optical fiber amplifier and some special fiber fabrication techniques were being developed; the big news of the first successful Tbit transmission experiment was among the many hot results available. These advances drove many researchers to tackle experimental Tbit transmission systems. The result was a flood of papers describing Tbit transmission systems. These systems were realized through the use of various advanced techniques such as dispersion management and optical amplification. The trend was expand WDM(Wavelength Division Multiplexing) systems into Dense WDM(DWDM) systems. To enhance DWDM system performance, new optical modulation techniques based on narrower bandwidth optical pulses, such as the optical duobinary technique, carrier suppressed-RZ technique and optical VSB technique, were employed. These narrow bandwidth systems have already been confirmed in experiments and there is an international race underway to improve the performance of the experimental systems. Figure 1 shows a theoretical representation of CS-RZ pulses, and a modulator block diagram(1). Due to the efforts of many researcher toward narrow band pulses, even optical SSB systems now appear feasible. Looking back over the rapid process in optical fiber systems, we can see that radio waves are being replaced by light waves. Though my predictions must not be taken as gospel, I think that we will not need to use any special characteristics of light waves in order to realize DWDM systems; radio wave will be simply replaced by light waves.

Erbium-doped optical fiber amplifiers (EDFA's) have made an extremely important contribution to the rapid progress in optical fiber systems. In particular, EDFA's provide exceptional freedom to researchers when designing optical fiber systems. Certainly EDFA's have played a big role in the development of optical fiber systems.

Further expanding on the topic of optical amplifiers, the use of stimulated Raman scattering amplifiers(SRS AMP.), which had up to now not been considered for real system utilization, are now being studied by many researchers. Moreover, SRS AMP's are going to be used in ultra-long transmission systems such as trans-Pacific Ocean systems. Considering the facts mentioned above, a technique has up and down, therefore we have to know that a technique having given up to use in some system in sometime may be used in other systems in the future .

Returning to the topic of OECC, odd numbered conferences have been held in Japan while the others were held in other countries. For instance, the second one was held in Seoul, the fourth one in Beijing, and the sixth one in Sydney.
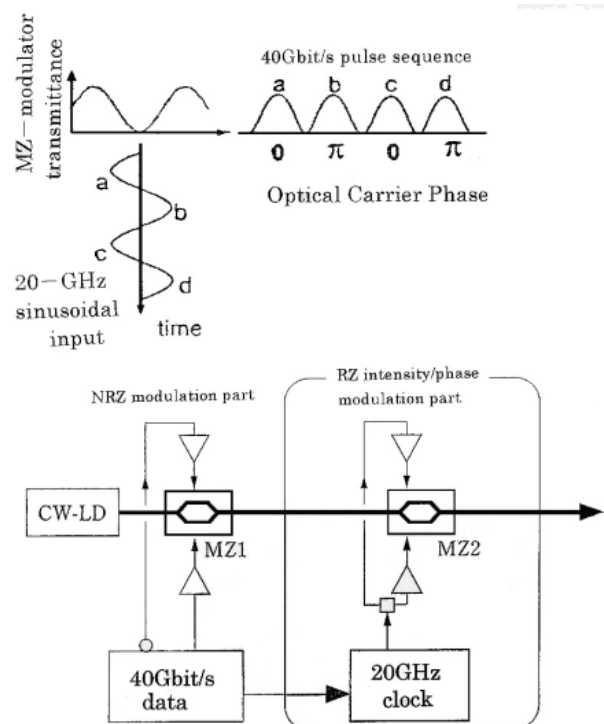

Figure 1   CS-RZ pulse sequence generation

For the 7th conference, the OECC2002 conference, we changed the venue from MAKUHARI Messe to Pacifico YOKOHAMA. This change created some concern that the number of attendees would drop. Fortunately, the 7th conference had attracted as many attendants as previous conferences. Of particular note, the 7th conference seemed to attract more papers in the optical communication field from Koreans.

In the field of optical fiber transmission systems, speeds over 40Gbit/s are becoming a hot topic, and a 160Gbit/s system experiment has been reported. Given this situation, a common question raised by many people in the field is whether 40Gbit/s systems are being used or not. To answer this question, we created the workshop "40Gbit/s Ready to Go! Really ? ". In the workshop, 13 presentations were made from the standpoint of researchers in the fields of transmission, devices, and measurement. The chairperson was Dr. HAGIMOTO of NTT. Due to his strong lead, the workshop was able to provide very useful presentations and discussions. Closing the workshop, Dr. HAGIMOTO challenged all presenters with the question " In a few words, please tell us when 40Gbit/s systems will be realized." Though most all presenters answered " Within a few years or so.", one presenter said " The systems will not be realized for some years.". This answer stuck in my mind because of it was the only negative reply.

Another key goal in optical fiber systems is to realize 1000 channel transmission. While the number of 1000 channels is not engraved in stone, the 1000 channel system is attractive because 10Gbit/s/ch by 1000ch offers 10Tbit/s capacity. It is more important to consider how to fully utilize this huge capacity before implementing the system.

In the near future, digital TV systems will be released and each family member will be able to enjoy their own high definition TV program at the same time. If this situation comes true, the subscriber line to each house will have to be an optical fiber because the capacities of about 1 Gbit/s are needed. This will be possible when " Fiber To The Home(FTTH) " is realized so this should be a near-term goal.

When optical fiber systems were first being studied, people had believed that " the bandwidth of an optical fiber is unlimited." This dream has long since faded. The bandwidth of an optical fiber is severely limited when we transmit pulses with very narrow pulse widths. As a real example, a 100fs pulse can not be transmitted fiber spans in excess of several kilometers. This fact explains the difficulty of using 100fs pulses for long distance transmission systems. Therefore, a new special fiber for ultra-short pulse transmission should be developed. Many current experimental transmission systems use single ps pulses to realize long distance transmission, because this pulse width is reasonable for ordinary fiber systems.

DWDM systems are now being intensively studied by many researchers around the world. Given the known constraints, a rapid increase in transmission capacity is not possible unless new bandwidths can be utilized in DWDM systems.

Though I have no idea on the next generation of communication systems, one candidate is the quantum control system. Unfortunately, because of this system's immaturity, it looks like we will have to use optical fiber WDM systems for the next 10 or 15 years.

Due to the mentioned above optical fiber transmission systems have many possibilities and the development systems also have many possibilities for the future of humanity.

Reference

[1] Masafumi KOGA, Noboru TAKACHIO and Yutaka MIYAMOTO : Present Technologies of and Expectations for Wavelength-division Multiplexing Transmission Systems, the Journal of the IEICE, vol.83, No.7, pp.569~575(2000.7).

Technical Committees Activities by/for Society Members

Yuji Oie
Vice-President, Communications Society

The Technical Committees (TCs) activities play a major role in the IEICE Communications Society. They are very diverse as listed in page 10, the first issue of Global News Letter, Vol.1, No.1, 2002, and enables the Society to cover a wide range of technical activities on communications..

Their major objective is to foster an exchange of current technologies among society members. In fact, each of them holds its technical meeting several times, 7 or 8 times, a year, organize panel and/or tutorial sessions in IEICE conferences, and offer some special issues for IEICJ journals. In this regard, the TCs are just reality of the Society that offer actual services and space where society members feel what the Society is.

The Society, as you know, is also supported by much time spent and great effort made by many volunteers, which are indispensable for the Society. The Society is never inflexible, but try to keep evolving in response to changing technologies and requirement by members. For this end, the Society strongly encourages the members to join TCs activities, and be involved in TCs which they are interested in. TCs are also flexible, and are changing. New TCs are sometimes proposed, and approved. Indeed, the TC on Internet Architecture is a brand new one starting this year.

This year, the Communication Society set up three task forces, one of which focuses on making policy and measures to empower TCs and make them more attractive, and I now serve as its chair, as a vice president of IEICE Communications Society. In the task force, we are currently making a proposal of establishing some committee which reviews all TCs once a few years to make sure that TCs meet the requirement from the Society members and provide them with the benefit. At the same time, it is thanks to great efforts of the TCs officers, committees members and many other volunteers, i.e., the Society members, that TCs activities can be performed. We appreciate their contribution very much, and new volunteers are always welcomed. We will further seek ways of improving services provided by the TCs activities, and ways of encouraging members to join the activities voluntarily. Please contact me (oie@cse.kyutech.ac.jp) if you have any ideas.

Technical Committee on
Mobile Multimedia Communications

*Shozo Komaki, Osaka University
**Kiyoharu Aizawa, Univ. of Tokyo
**Masami Yabusaki, NTT DoCoMo
***Akira Nakagawa, Fujitsu, ***Akihisa Kodate, Waseda University
***Yoshimitu Aoki, Shibaura Institute of Technology, ***Minoru Okada, NAIST
*Chair, **Vice Chairs, ***Secretaries

Shozo Komaki, Chair

1. Introduction

The technical committee on Mobile Multimedia Communications (MoMuC) was founded on May 1997 as a local board of the International Workshop on Mobile Multimedia Communications. From 1997 to 2000, the MoMuC committee organized the international workshop on MoMuC four times as well as held seven domestic technical workshops.

Since 2001, the MoMuC committee holds workshops in cooperation with other related technical committees, such as Antennas and Propagation Committee (AP), Communication Quality Committee (CQ), Information Networks Committee (IN), Multimedia and Virtual Environment Committee (MVE), Microwaves Committee (MW), Radio Communication Systems Committee (RCS), and Spread Spectrum Technology Committee (SST).

The technical committee on MoMuC covers various research fields associated with mobile multimedia communications. The research fields range from broadband wireless communication technologies to multimedia applications for mobile users. In addition, the MoMuC committee is now covering the business aspect of mobile multimedia communications for seeking commercial applications of mobile and multimedia technologies.

2. Scope

The following is a list of research fields covered by the MoMuC Committee.

①Mobile multimedia applications and platforms

②Mobile multimedia systems

③Mobile services and contents

④Mobile computing and advanced mobile IP

⑤Intelligent Transportation System for mobile multimedia

⑥Mobile agent system

⑦Network management and services for mobile multimedia

⑧Wireless networks for personal communication

⑨High speed wireless packet systems and technologies

⑩Mobile terminal hardware and software

⑪Quality of service in mobile multimedia networks

⑫Next generation mobile Internet

⑬Medium access/data link control

⑭Software radio for mobile multimedia

Fig.1 Scope of MoMuC Committee

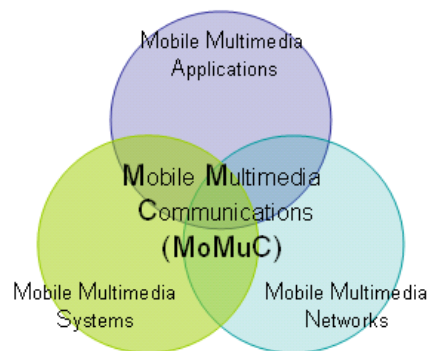## 3. Major Activities

(1) Technical workshops

One or two day technical workshops are held 6 times a year. On 13-14, November, the next meeting is held at Hakodate, co-organized by IN committee (IEICE), MVE committee (IEICE), and AVM committee (IPSJ). The number of the presentation is 37, including 3 invited presentations for services and applications for high functional cellular phones and

recent activities of the next generation video coding standard H.264 / MPEG-4 AVC.

(2) Special issue on mobile multimedia communication

Since 2000, MoMuC has organized special issues on Mobile Multimedia Communications for the IEICE Transactions on Communications. The purpose of these special issues are to present the recent advance of mobile multimedia communications technologies. The last issue was published in October 2002, which includes 35 papers, 4 letters, and one invited paper titled "Mobile Service History and Future" by Dr. Yumiba, Senior Vice President of NTT DoCoMo, and Dr. Masami Yabusaki.

4. International Workshops

Proposed by the former chair of this technical group, Prof. H. Tominaga, the first International Workshop on Mobile Multimedia Communications (MoMuC) was held in Tokyo, organized by most of current board members of this Technical Committee. Though that time was still at very early stage for Mobile Multimedia Communications commercially, for the number of mobile phone users were only about 3 Millions, which is about 1/25 of current situation(7,7 Millions, August 2002), the first international workshop was very successful to provide a hot discussion topics among researchers with a different background such as Wireless technologies, Multimedia technologies represented by Picture Coding(MPEG-4) and Automobile navigation technologies(GPS).

After the 1st MoMuC International Workshop, 6 International Workshops have been held so far, namely 2 times in Europe(UK and Germany), 2 times in USA, 2 times in Asia(Korea and Japan). This technical committee have been contributing a lot for the workshops by promoting paper submissions, reviewing submitted papers, organizing sessions and chairing sessions.

The next MoMuC international workshop is planned in October, 2003 in Munich, Germany. And Chair(Prof. S. Komaki) and vice chairs(Prof. K. Aizawa and Dr. M. Yabusaki), former chairs(Prof. H. Tominaga and Prof. T. Hattori) are working as Steering Committee or Technical Program Committee members.

As Japan is the world leading country for the various mobile internet services and high technology research in this field, this committee's role is getting more important to offer chances and places for the fruitful discussions.

5. Call for Presentation and Participation

Paper submission and participation to the conferences including international workshop MoMuC2003 are very welcome. All the events and related information are provided on the MoMuC committee's web-site:

http://www.ieice.org/cs/~momuc/jpn.

And don't forget to check the next international workshop:

http://www.cdtm.de/momuc/

Shozo Komaki, Chair of MoMuC Committee, was born in Osaka, Japan, in 1947. He received B.E., M.E. and Ph.D degrees in Electrical Communication Engineering from Osaka University, in 1970, 1972 and 1983 respectively. In 1972, he joined the NTT Radio Communication Labs., where he was engaged in repeater development for a 20-GHz digital radio system, 16-QAM and 256-QAM systems. From 1990, he moved to Osaka University, Faculty of Engineering, and engaging in the research on radio and optical communication systems. He is currently a Professor of Osaka University. Dr. Komaki is a senior member of IEEE, and a member of the Institute of Electronics and Information Communication Engineers of Japan(IEICE), the Institute of Television Engineers of Japan(ITE). He was awarded the Paper Award and the Achievement Award of IEICE, Japan in 1977 and 1994 respectively.

Technical Committee on Space, Aeronautical and Navigation Electronics (SANE)

Chair; Sakae Nagaoka, ENRI[*1]
Vice chair; Korehiro Maeda, NASDA[*2]
Secretariat; Masafumi Iwamoto, Mitsubishi Electric Corp.*[3]
and Noboru Takata, NASDA[*2]

*1 Electronic Navigation Research Institute
*2 National Space Development Agency of Japan
*3 Information Technology R & D Center

1. Introduction

The Technical Committee on Space, Aeronautical and Navigation Electronics (SANE) originates from the Avionics Technical Committee established in 1956. The name of the committee was changed to the Navigation Electronics in 1962 and to the current name in 1966.

SANE is a unique professional committee dealing with total integrated electronic systems and the enabling technologies. The members are interested in the design, integration, test, and analysis of large, complex systems consisting of major subsystems that contain various kinds of electronic devices. The scope of the committee ranges from fundamental technology to application systems associated with space, aeronautical and navigation electronics.

Monthly technical meetings are held except for March and September. These are beneficial for participants providing an opportunity for information exchange among engineers in their specific fields.

2. Area of Interest

SANE includes all aspects of research on space, aeronautical and navigational electronics and relevant to areas of applications, systems and equipment.

Subjects to be covered include, but are not restricted to:

- electronic and electromagnetic wave application systems relevant to mobile objects, such as spacecraft, satellites, airplanes, vehicles and vessels (a radar, ranging and positioning, communication, tracking, attitude and orbital control, telemetry, command, etc.),
- systems, equipment, etc of remote sensing, communication, science and technology demonstration/evaluation, and
- systems, equipment, and a simulation of navigation and traffic control.

3. Activities

SANE regular meetings are organized with IEEE AES Japan chapter and other related technical groups. Table 1 shows the schedule of the meetings in 2002-03 seasons. The IEICE Society Conference and General Conference are held in September and March, respectively.

Table 1 SANE regular meetings 2002-03

Date	Place	Themes	Co-organizer
Apr. 26	Nippon Institute of Technology (Saitama)	Radar signal processing	
May. 24	Ishinomaki Cultural Center (Miyagi)	General	
Jun. 28	Tsukuba Space Center, NASDA (Ibaraki)	Space Applications Symposium	Sponsored by NASDA
Jul. 26	Electronic Navigation Research Institute. (Tokyo)	Navigation and traffic control	
Aug. 30	Kikai-Shinko-Kaikan (Tokyo)	Radar and remote sensing	
Oct. 17	Fukui Univ. (Fukui)	General	AP RCS
Nov. 29	Kikai-Shinko-Kaikan (Tokyo)	Environmental measurements	
Dec. 20	Tokyo Univ. of Mercantile Marine	Navigation and guidance	
Jan. 24	Communications Research Lab. (Tokyo)	General	
Feb. 28	Kyoto Univ. (Kyoto)	Satellite comm. systems and space-borne equipments	SAT

AES: Aerospace & Electronic Systems Society
AP: Antenna and Propagation
RCS: Radio Communication Systems
SAT: Satellite Telecommunications

4. Major Topics

Examples of major topics in space technologies are as follows:

[Earth Observation]

Precipitation Radar (PR) mounted on TRMM (NASA) provides the three dimensional distribution of rain since 1997 and AMSR-E mounted AQUA (NASA) (May 2002) provides excellent data for studying the global water circulation. In addition to MOS-1 (1987), MOS-1b(1990), JERS-1(1992) and ADEOS(1995), ADEOS-II and ALOS will be launched in 2002 and 2004, respectively to monitor earth environment. Multi-functional Transport Satellite (Aeronautical and Meteorological satellite) MTSAT-1R and MTSAT-2 will be launched in 2003 and 2004, respectively.

[Communication]

DRTS (Data Relay Test Satellite) to transfer data from earth observation satellites and JEM attached to International Space Station was successfully launched on Sep.10, 2002. ETS-VIII will be launched in 2004 and two big antennas (15mϕ) will be deployed. WINDS will be launched in 2005 to realize high data-rate space communication. Optical communications between OICETS and ARTEMIS (ESA) and between JEM and a ground station are planned.

Quasi-zenithal satellite (figure-8 satellite) systems are studied conceptually for the applications including mobile satellite communications at a high elevation angle and dual use of the same frequency between geostationary satellites, as well as figure-8 satellites, in fixed-satellite services, satellite-based positioning, and observation of the polar region.

[Space station]

FM (Flight Model) of JEM "Kibo" has been tested in the Tsukuba Space Center, NASDA and various experiments using JEM on orbit are planned.

[Technology demonstration]

Rendezvous docking and space robot technologies were developed in ETS-VII. MDS-1 was launched in Feb., 2002 and satisfactory data on commercial semiconductor devices, terrestrial solar cell, Common Pressure Vessel Type Battery, Solid-state Data Recorder, Parallel Computer System, and on Space Environment Data Acquisition equipment (SEDA) under the higher radiation environment using the geostationary transfer orbit were obtained. USERS was launched with DRTS to　establish an unmanned autonomous-return system and conduct crystal growth experiments of high temperature super conductive material under the micro-gravity environment. Recovery will be made within 255 days after the launch. Small satellites (50kg) such as μ-LabSat and WEOS will be launched with ADEOS-II as piggyback.
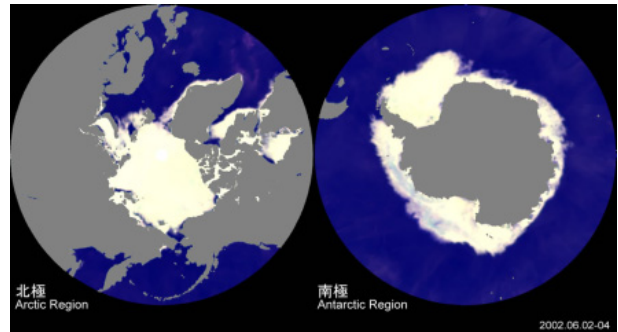
Figure 1 Sea ice distribution around the North Pole and South Pole observed by AMSR-E. (Provided by NASDA)

[Science]

MUSES-C will be launched in 2003 to observe an asteroid and return rock samples to the earth. SELENE is developed to observe the moon from a circular orbit of the moon.

These afore-mentioned results were presented in the SANE regular meetings including the Space Applications Symposium supported by NASDA held in June every year. Sea ice distribution through cloud around the North and South Poles observed by AMSR-E is shown in Figure 1. A scene of Space Applications Symposium held on June 28, 2002 is shown in Figure 2.

Figure 2 Space Applications Symposium held on June 28,2002.

Examples of topics on aviation are as follows:

[Navigation]

Nowadays, Global Navigation Satellite Systems (GNSS) represented by GPS are key navigation systems. The accuracy and dependability of GPS is not always sufficient for a safety related mission such as civil aviation. To improve these, augmentation systems so called GBAS (Ground Based Augmentation System) or SBAS (Space Based Augmentation System) are under development.

[Air Traffic Control]

Automatic Dependent Surveillance (ADS) using VHF/Satellite data link has been introduced to some oceanic airspace. When the MTSAT system is completed with the launch of MTSAT-2 in 2004, aircraft separation minima in the Pacific Oceanic airspace will be reduced significantly due to introduction of satellite based communication, navigation and surveillance.

5. Paper Submission to Regular Meetings

Authors are requested to pre-register to the secretariat via E-mail (sane_chair@ieice.org). The following information must be provided in the pre-registration form.
- Title
- Names and affiliations of authors (Presenter is requested to be a member of IEICE or IEEJ)
- Abstract (about 50 words)
- Address of the corresponding author (Mail address, Fax number and E-mail address)

Acronyms

MOS-1:Marine Observation Satellite
JERS-1: Japanese Earth Resources Satellite-1
    (developed by JAROS and NASDA)
ADEOS: ADvanced Earth Observing Satellite
TRMM: Tropical Rainfall Measuring Mission
    (developed by NASA)
ADEOS-II: ADvanced Earth Observing Satellite-II
AMSR: Advanced Microwave Scanning Radiometer
ALOS: Advanced Land Observing Satellite
    (developed by NASDA and JAROS)
MTSAT: Multi-functional Transport SATellite
    (developed by MLIT)
MLIT: Ministry of Land, Infrastructure and Transport
DRTS: Data Relay Test Satellite
WINDS: Wideband Inter-Networking engineering test
          and Demonstration Satellite
OICETS: Optical Inter-Orbit Communications
          Engineering Test Satellite
JEM: Japanese Experiment Module
MUSES-C: ISAS's MU Space Engineering Satellite-C
SELENE: SELenological and Engineering Explorer
    (developed by ISAS/NASDA)
USERS: Unmanned Space Experiment Recovery System
    (developed by USEF)
WEOS: Whale Ecology Observation Satellite
    (developed by Chiba Institute of Technology)

PS2002

Kenichi Yukimatsu(Akita Univ.), General Co-chair
Koso Murakami(Osaka Univ.), TPC Co-chair
Masahiko Fujiwara(NEC),Organizing Committee Co-chair
Morito Matsuoka(NTT), Hideki Tode(Osaka Univ.), Secretary of PS

Introduction

Since 1987, the International Topical Meeting on Photonics in Switching(PS) had been held every two years in the beginning but recently every year, usually in the USA. Outside the USA, PS'90 and PS'96 were held in Kobe and in Sendai, respectively, of Japan. This year, especially, the joint international conference, COIN+PS2002 (the International Conference on Optical Internet2002 & Photonics in Switching 2002) was held from 21 to 25 July 2002 at Hyatt Regency Cheju Island, KOREA(Fig 1).

Fig.1 Conference Hotel (Hyatt Regency)

This joint conference are organized by both conference committees, but technical program of each conference was constructed independently.

Statistics

- Number of Attendees: total 329(COIN+PS)
- Number of PS2002 Papers:
    total 69 papers including 10 invited papers and 20 poster session papers.

Country distribution of the accepted papers (not including the poster session papers) is shown in Fig.2. Presentations from the Asia region were about 65% and from Europe and America region were about 35%. Though PS conference was held in Asia region this year, it can be said that its internationality was kept.

Sessions and Contents

Main technical sessions of PS were composed of the following topics;

- Optical Packet Switching,   1 session,
- Optical Switches & Signal Processing, 2 sessions,
- Optical Switching Devices,   3 sessions,
- Optical Network Architecture & Systems,
                                         2 sessions,
- Optical Routing,   1 session.
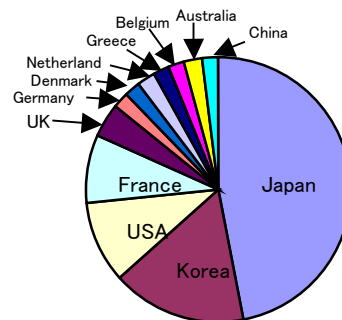
Fig.2 Country Distribution of Accepted papers
(not including Poster Session Papers)

In particular, the research fields of optical switching devices and optical switch were mainly presented from Japanese research organizations. On the contrary, the field of network architecture and routing were presented from many countries. This situation reflects very active research in progress from Asia-pacific region such as Japan and Korea from the viewpoint of both device and system side research topics.

Invited and regular presentations about wide research topics were very attractive and gave valuable impacts for audience. In particular, the following topics were focused on.

[Device topics]

Optical wavelength conversion, Optical regeneration, WDM channel selector, and Polymetric waveguide devices.

[System topics]

Optical packet switching, Prototype of the optical switches, Possibility of electro-optic switches, GMPLS, Optical Burst Switching, and Optical IP network.

Main Committee Members of PS and COIN

COIN2002

Satoru Okamoto
TPC Member, NTT Network Innovation Laboratories

1. Introduction

The International Conference on Optical Internet 2002 (COIN 2002) was held in Cheju Island, Korea during July 21-25, 2002 [1]. This year had a special meaning for this conference because it started from this year with the ambitious goal of stimulating technological exchanges in the field of "Optical Internet" as one of the most important fields of future communications. The 1st COIN was successfully closed with over 300 attendees from 13 nations.

This conference has been planed in Korea. The Korean Institute of Communication Sciences (KICS) and the Korea Optical Internet Forum (KOIF) were the main start-ups. From Japan, the Photonic Internet Forum (PIF) [2] and the IEICE technical group on Photonic-Network based Internet (PNI) [3] were main supporters. The conference will be alternating among Australia, China, Japan, and also U.S.A.

Name: COIN2002 (together with PS2002)

Sponsors:
- IEEE Communications Society
- IEEE Lasers and Electro-Optics Society
- Optical Society of America
- Korean Institute of Communication Sciences
- The Institute of Electronics, Information and Communication Engineers, Japan
- Ministry of Information and Communication, Korea
- Korea Science and Engineering Foundation

Fig. 1 Conference Hotel (Hyatt Regency Cheju), and reception.

2. Statistics

Papers accepted	107 (84 orals, 23 posters)
Number of attendees	329
Technical Sessions	18
Invited Speakers	4

After reviewing, 107 papers were accepted for presentation at the conference. The 107 papers consist of 84 regular presentations and 23 poster presentations. In addition the program includes 3 plenary speeches, 4

invited talks, and 1 special session. And also the program includes Get-Together Party, Reception, and Banquet.

Fig. 2 Get-Together Party (with plenary speaker Mr. Scott Bradner: IEEE Transport Area Co-Director, IETF Sub-IP Area Co-Director).

Fig. 3 Banquet at Korea House. The Korea House imitates the model of the traditional 99-room mansion for the people of high birth in Lee Dynasty.

3. Session overview

The conference has many topics in the optical internet area. The covered area is very wide from devices to network management protocols. The topics are metro networks, GMPLS (generalized multi-protocol label switching), network restoration/protection, waveband routing, RWA (route and wavelength assignment) problems, optical packet switching, optical burst switching, high speed optical switches, lasers, and optical amps. A statistical summarization of main topics is shown in Table 1.

Table 1 Summarization of main topics.

Category	Papers
Metro networks	6
GMPLS	14
Network restoration/protection	6
Waveband routing	2
RWA problems	9
Optical packet switching	8
Optical burst switching	8

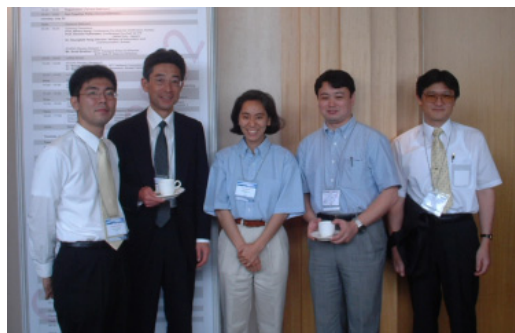| High speed optical switches	5
Lasers	4
Optical amps	5

Fig. 4 Several speakers from Japan.

Fig. 5 Poster session.

4. Program overview

Monday, July 22
  Chairman's Message (with PS2002)
    Prof. Minho Kang, Conference Co-chair for COIN (ICU, Korea)
    Prof. Kenichi Yukimatsu, Conference Co-chair for PS (Akita Univ., Japan)
  Congratulatory Speech (with PS2002)
    Dr. Seungtaik Yang, Former Minister (Ministry of Information and Communication, Korea)
  Plenary Speech (with PS2002)
    The Internet and Optical Networking at the IETF, Mr. Scott Bradner (Harvard University)
    More "HIKARI (light)" for Broadband Networking, Dr. Masao Kawachi (Director, NTT Network Innovation Labs.)
    The Past, Present and Future of Optical Switching, Dr. Marko Erman (Senior Vice President, Alcatel Optronics)
  MoA: Network Architecture
  MoB: Optical Networking
  MoC: Optical Switching Technology I
  MoD: Optical Device and System I
Tuesday, July 23
  TuA: Optical Switching Technology II

  TuB: Optical Device and System II
  TuC: Optical Device and System III
  TuD: Optical Switching Technology III
  TuE: Optical Device and System IV
  TuF: Routing in Optical Networks
  TuG: Optical Protection and Restoration
  TuH: Access and Metro Optical Networks
  Meeting with Industries (with PS2002)
Wednesday, July 24
  WeA: Management Protocol I
  WeB: Network Control and QoS
  WeC: Management Protocol II
  WeD: Optical Access Networks
  Special Session (with PS2002)
    "R&D Policies for Optical Internet in Korea", Mr. Yoo-Jong Song, Director IP Policy Division, Ministry of Information and Communication, Korea
    "Japanese Policies", Mr. Charley Katsuya Watanabe, Director of Research and Development Office, Technology Policy Division, Ministry of Public Management, Home Affairs, Posts and Telecommunication, Japan
    "Standardization Activities for IP over Optical Networks", Dr. David H. Su, Division Chief of Advanced Network Technologies, NIST, USA
    "Technologies for an Optical Internet Core Network", Dr. Frank Ruhl, Project Manager of Transport Architecture, Telstra, Australia
    "Recent Advances in Photonic Networking Technologies", Drs. K. Sato and M. Koga, NTT Network Innovation Laboratories, Japan
    "Developments in Optical Internet Technologies in Korea", Dr. Kyung Pyo Jun, Executive Director of IT R&D Project Division, ETRI, Korea
  WeE: Poster Session
Thursday, July 25
  ThA: Optical Burst Switching
  ThB: Wavelength Conversion

5. Next conferences

COIN2003 will be held in Australia at July 2003. COIN2004 will be held in Yokohama, Japan at July 2004 with OECC2004.

References

[1] http://www.coin-ps2002.org/
[2] http://www.scat.or.jp/photonic/
[3] http://www.ieice.org/cs/pni/

OECC2002 Workshop

Katsumi Emura
OECC2002 TPC Secretary, NEC Networks

1.   Introduction

The seventh Optoelectronics and Communications Conference, OECC2002, was held at Pacifico Yokohama from July 8 to 12. Three related informal workshops were conducted at the same site on July 8. The participants were enjoyed informative talks by world-class experts in various fields and had good discussions and information exchange. The themes of the workshops were as follows: 1) "Optical networking – Issues and future directions –"; 2) "Is 40 Gb/s ready to go!, really?"; and 3) "Ultimate fiber technologies for optical transmission systems." This report covers the Workshop 1.

2. Workshop 1: Optical networking -Issues and future directions -

This workshop had two objectives: 1) to discuss and share knowledge of future directions and the roadmap for optical networking; and 2) to get experts' views of innovative technologies.

To cover these two objectives, experts were invited from the U.S., Europe, and Japan. The agenda and the invited speakers are as listed below. The organizer asked the speakers to tackle the following discussion items:

- What is the most suitable granularity to use for the optical domain to handle?
  (fiber, wavelength, burst, packet, etc)
- What kinds of functionality can be achieved with optical technology?
- What are the suitable control-/management-plane technologies for optical networks?
- How far can we go in the transparent regime?
  (Potential and value of optical switches)

Each speaker presented his views in a 20-minute talk.

After the presentations, the speakers continued for about one hour in a panel discussion. About 100 people attended the workshop 1 and had good discussions.

3. Major outcomes

Throughout the workshop, the following conclusions were generally agreed upon:

(1) Optical networks will play an important role in next-generation core networks, which will be pervasive & ubiquitous (by Prof. Kitayama; Fig.1) or have ambient intelligence (by Prof. O'Mahony).

(2) The technical direction will go from circuit- to burst-, to packet-switching. As the capacity grows, the multi-granularity (multi-layered) approach will become more attractive.

(3) Optical packet and all-optical label switching are technically feasible. Some demonstration experiments have already been conducted.

(4) It is important to provide a solution that is more cost effective than electrical approach.

(5) The expected breakthroughs in photonic components will include large-scale optical switches and tunable transmitters and receivers.

(6) To make good use of the features of optical networks, control-plane technology is will become much more important.

(7) Standardization activities are always important.

4.   Conclusion

The workshop ultimately concluded that although we are facing a serious telecom slump, we can foresee a bright future for optical networks if they can provide cost-effective, functional, and profitable solutions for next-generation networks.

Agenda

Introduction
Directions and Roadmaps

  – **Photonics roadmap from European consortium**
             Prof. M. J. O'Mahony (Univ. of Essex)
  – **Photonic network roadmap from PNI/PIF Japan**
             Prof. K. Kitayama (Osaka Univ.)
  – **Directions of US networks and standardization**
             Dr. M. Cvijetic (NEC America)

Experts view for optical networking

  – **Photonic routers and related issues**   **Dr. N. Yamanaka (NTT)**
  – **Multi-granularity transparent optical networks**
             Mr. L. Noirie (Alcatel)
  – **The All-Optical Label Switching Approach**
             Prof. S. J. B. Yoo (UC Davis)
      (break)

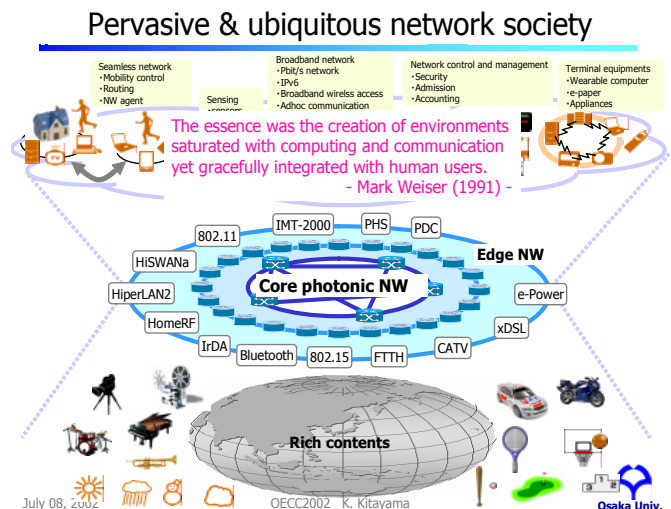**Panel Discussions**   **All the speakers and attendees**

Figure 1   Forthcoming network society predicted by Prof. K. Kitayama from Osaka Univ.

Report of the 4th APSITT 2001 - Internet Video Conference between Kathmandu and Atami -

Naveen Prakash Jung Shah*, Yoshitsugu Tsuchiya**, Masaki Aida**
*Vice-chancellor, Tribhuvan University, Nepal
**NTT Information Sharing Platform Laboratories

1. Overview of this report (by the translator)

The fourth APSITT (Asia-Pacific Symposium on Information and Telecommunications Technologies) has been held from 7th to 8th of November, 2001. As the consequence of the terrorist attack in the United States, the symposium had to be held simultaneously in Nepal and Japan. Due to the tenacious efforts of the staffs and participants, the symposium has achieved a fruitful result. This paper will report how the staffs have overcome various difficulties. Report is based on the statements of Professor Naveen Prakash Jung Shah, Vice-chancellor of Tribhuvan University, Nepal.

2. Introduction

APSITT is held every two years to provide a forum to exchange ideas and views of the technologies in Asia-Pacific region, in the field of telecommunication, computer networking, and information processing technology. The symposium is held by the cooperation between the Communication Society of IEICE and the universities of the countries where the venue is located. Past venues are in Thailand, Vietnam, and Mongolia, and its activities are highly evaluated by the countries.

We are grateful that the Tribhuvan University is the co-organizer of the fourth symposium of APSITT. We believe that the decision of the committee was correct to select Tribhuvan University, which is the national university of Nepal and has outstanding aspects in its historical background, scale, and academy.

Nepal as a country is expecting to IT for the its development, and putting a lot of effort to provide excellent IT technicians. It was a good news that the Japanese Prime Minister Mori at that time has declared the cooperation in the IT field, when he has visited Nepal. The APSITT would be a great opportunity for the people in each country to directly collaborate and form their relationship.

Although the preparation of the symposium faced with many difficulties, it was held successfully on November 7th to 8th , 2001. We have gathered 90 submissions of technical papers, and 75 out of this is selected through the elimination process of the TPC. Selected papers include 4 contributions from Nepal. With many thanks to the ones who dedicated to this success, the process of the preparation is mentioned here.

3. Preparation for the Symposium

Preparation for the symposium was in good circumstances at the beginning. The Nepalese side was organized by IOE (Institute of Engineering) Tribhuvan University, including Prof. Dean Jeev R. Pokharel, Prof.Mukunda S. Pradhank, and Assistant Prof. Jyoti Tandukar as contact person, and many other key persons. The Japanese side is lead by Prof. Tomonori Aoyama as the Vice Chair, and many others including Dr. Yuji Inoue (NTT Data), Mr. Hirohiko Sato (NTT), Mr. Masanobu Yoshimi (NTT) , and Dr. Masaki Aida (NTT).

On June 1st, the sad incident of the Nepalese Royal Family has occurred. There was a temporal disorder in Kathmandu, and curfew has been imposed. The committee had to carefully observe the situation, and had to postpone the preparation meeting to be held in Kathmandu. Despite of the above difficulty, the preparation meeting was held one month later than scheduled. The Program Committee has gathered 90 paper submission, which is the largest in quantity and quality through the past occasions of APSITT. Through its rigid review process, the Program Committee has selected 75 papers, including 4 from Nepal.

4. September 11th incident and its effect

The terrorist attack on September 11th was a horrible incident that no one in our world would ever forget. Because of this incident, many of the Japanese corporations have discontinued overseas business trips. There was also a tendency that the participants from other countries face with the difficulty in traveling overseas. The Committee of APSITT has seriously discussed how they can face with this fact. At that time, discontinuance of the Symposium was one of the choices, since it could have been done with minimum loss of preparation costs. However, there was one fact that we could not dismiss: For some students as participants, paper presentation in the APSITT is one of their indispensable processes for obtaining academic degrees. There were such serious reasons that we could not easily decide for discontinuance.

Considering such situations, the committee of APSITT has decided to hold the symposium in the following way: simultaneous conference held both in Nepal and Japan, connected by Internet video conference. There was only one month left to prepare before the conference date.

At this moment, the details of the video conference in its technical and financial aspect was unclear. There was a risk to lose face before the invited people, if the conference were resulted in failure.

The Committee had to quickly re-organize its strategy for the preparation. Thanks to Mr. Yanagisawa (Wyvern Co. Ltd.), who has arranged the hotels and air flight to Nepal, cancellation of hotels and arrangement of the venue in Japan was quickly managed. Hotel New Akao Royal Wing, Atami, Shizuoka Prefecture, Japan was selected as the Japanese venue. Supporting team has been formed in order to manage the access lines of the hotel to connect to the Internet.

Because of the distributed venue, the printing of the proceedings book was also a hard task. Assistant Prof. Jyoti Tandukar, who has experiences of publishing his magazine "CORExpress", printed the proceedings book and send back to Japan within two weeks, which is an extraordinary short period of time. We have heard that the quality of the printing is highly evaluated by the Japanese participants, which is our great pleasure. We are also appreciable of the cover design, which is an elaborated work that uses the colors from the Nepalese national flag.

5. Preparation for the simultaneous video conference

For budgetary reasons, the Committee has decided to use the Internet for video conferencing connections, instead of leased lines or telephone lines. The problem here was to find a video conferencing system that performs sufficient quality and stability, even with the overseas Internet connection. It was our great luck that we were able to use the KDDI Corporation's Internet video conferencing system, thanks to the courtesy of KDDI Laboratories and KDDI Technologies,

Dr. Aida (NTT), Mr. Hamaoka (NTT), and Dr. Ito (KDDI/Keio University) came to Kathmandu bofore the Symposium in order to arrange the Nepalese side and technically support the video conferencing system. It was easily imaginable that they had to negotiate with their affiliations for the approval of visiting abroad at that period of time. Some of the Japanese corporations were discontinuing business trips that use aircraft carriers. Moreover, even the experts such as them had to struggle hard with configuration of video conferencing system to perform sufficient quality. Their work sometimes lasted until midnight, until the day before the Symposium.

As the result of the above intensive efforts of the staffs in Nepal and Japan, they have made success in holding the symposium with a 3-parallel simultaneous video conference. The success is a joint achievement as the result of the coordination of the venue (Hotel New Akao and Tribhuvan University), access lines, video communication system (with a great help from KDDI Corporation), thorough effort of the Japanese staff in

Fig. 1 Preparation at the Nepalese venue (Configuring video conferencing system provided by KDDI)

Fig. 2 Dr. Ito and Mr. Hamaoka at Tribhuvan University

Fig. 3 Session Room and Nepalese participants

Nepal, and the Nepalese staff's outstanding and devoted work as the local arrangement committee.

6.   Technical Program

Together with the above result, we have formed an excellent technical program which overcomes the 3 hours and 15 minutes time differences between Nepal and Japan. On the day of the symposium, there were sufficient number of participants in both venue (more than 60 in Nepal, and 80 in Japan). It was a great pleasure that numerous participants have gathered in Kathmandu, despite the fact that they had to start their session at 5:45AM of our local time.

The 3-parallel video conference system has worked perfectly, through which the presentations, questions, and answers were exchanged. This interactive conference included the following program events:

Opening Session
Chair: Dr. Yuji Inoue, NTT DATA, Japan

Opening Address
Rishi Kesh Gautam, Minister, Nepal.

Welcome Speech
Prof. Naveen Prakash Jung Shah, Vice-chancellor, Tribhuvan University, Nepal

Keynote Speech
Prof. Tomonori Aoyama, President, IEICE-CS, Univ. of Tokyo, Japan

Guest Speech
IT Status in Nepal
Mr. Suresh Kumar Regmi, President, IT Professional Forum, Nepal

Keynote & Guest Speech Session
Co-chairs: Prof. Yuji Oie, Kyushu Inst. of Technology,

Fig. 5. Presentation by Prof. Naveen Prakash Jung Shah, the Vice Chancellor of Tribhuvan University

Japan
Mr. Raghubarlal Shrestha, General Manager, Nepal Telecom

Keynote Speech
Dr. Rameshananda Vaidya, National Planning Commission, Nepal

Guest Speech
Management concept for Internet services: How to harmonize regulation and network systems
Tetsuya Miki, Univ. of Electro-Communications, Japan

Guest Speech
Hendrik Berndt, DoCoMo Europe, Germany

Telecommunications Regulation for Development of IT
Dinesh Kumar Sharma and Minoda Magar
(1st paper, Session 10 in proceedings.)

Galaincha Software - Modern technology for an ancient craft
Jyoti Tandukar
(4th paper, Session 10 in proceedings.)

HDV Extraction Algorithms in the Particle Tracking Velocimetry
Shashidhar Ram Joshi
(5th paper, Session 12 in proceedings.)

Network Based Presentation Technology
Shreeniwas Sharma and Navin Gorkhali
(7th paper, Session 10 in proceedings.)

Closing Speech
Prof. Jiba Raj Pokharel, Dean, Institute of Engineering, Tribhuvan University, Nepal

Fig. 4 Main Hall of the Nepalese venue

Fig. 6. Presentation of technical papers

Fig. 7. Staffs of the Nepalese venue (At a Japanese Restaurant in Kathmandu. Staffs include Dr. Aida, Dr. to, Mr. Hamaoka from Japan. Nepalese staffs include Assistant Prof. Jyoti Tandukar, Prof. Binod Vaidya)

7.   Concluding remarks - Towards APSITT 2003 -

The forth APSITT resulted in a fruitful success, despite of the difficulty of international situation. We have especially achieved not only technical experiences but also human-to-human relationship through our cooperation against difficulties. Through our collaboration, we believe that in some way we have overcome the distance of the both countries.

Together with the staff in Japan, we are glad from our heart at this fact. We are impressed by the organizing ability, speed, concentration, techniques of the Japanese committee, and are grateful that there was an outstanding team-work with our Nepalese committee. We believe that there was a similar sense of achievement among the staffs of the Japanese venue in Atami as well.

We have heard that Nepal is again discussed as the candidate of the next APSITT in 2003, and we are glad to invite the Japanese people again. We hope that the preparation will be done in a stable international situation, in order to provide collaborating opportunities among the researchers and technicians in various countries. We are looking forward to seeing you in Nepal.

If any of you have been interested in the list of people that have greatly contributed to the success of the Symposium, please visit the web site of APSITT2001. The web page can be accessd from the URL: http://www.ieice.org/cs/in/APSITT .

A Report on APNOMS 2002

Yoshiaki Kiriha(NEC), Shoichiro Niwa(HP)
Mitsuhiro Azuma(Fujitsu), and Hiroshi Uno(NTT)

1. Introduction

Since 1997, APNOMS(Asia-Pacific Network Operations and Management Symposium) has been held every year, sponsored by IEICE TM Committe and KICS KNOM (Korean Network Operations and Management Committee) with supports from IEEE CNOM(Committee on Network Operations and Management), IEEE APB(Asia Pacific Board) and Telemanagement Forum. APNOMS has continued to play an important role for exchanging and discussing all aspects of telecommunications management issues among researchers, practitioners, operators, and system developers in both academic and industry organi-zations in the Asia-Pacific region as well as other regions as one of well recognized international symposium. The 6th (APNOMS 2002) which was held September 25-27, 2002 in Jeju Island, Korea, made another great success, attracting 268 academics, researchers, operators, vendors from 11 countries (Japan, Korea, Australia, Thailand, Hong-Kong, Russia, Portugal, Ireland, USA, Canada, Germany). Its program included keynote speeches, tutorials, special sessions, technical sessions, poster sessions, a distinguished experts panel and vendor exhibitions.

The theme of this symposium was **"Integrated Management for Telecommunication Solutions - Process, OSS and Technology"**. With the rapid progress in the information networking technologies, solutions for network operations and management have surely become very important for our e-world environments. To provide sophisticated e-Business solutions, new management technologies, which integrate business and manage-ment processes, and which integrate systems and network operations, is strongly required. With this background, this sympo-sium focused on the theme of integrated management for telecommunication solutions.

2. Tutorials

The first day of the Symposium consisted of six tutorials covering different aspects of integrated management for telecommunication solutions. Koichi Asatani (Kogakuin University, Japan) gave a tutorial on "QoS Issues in VoIP Service". Young-Tak Kim (Yeungnam University, Korea) gave a tutorial on "DiffServ-aware-MPLS Networking: a Promising Traffic Engineering for Next Generation Internet (NGI)". Raouf Boutaba (University of Waterloo, Canada) gave a tutorial on "Quality of Service Control in the Internet". Graham Chen (EPAC Technologies, Australia) gave a tutorial on "Wireless Location-based

Services: Technologies, Applications and Manage-ment". Christian Rad (AT&T Laboratories, USA) gave a tutorial on "Service Level Agreements (SLA)". Kouzou Sakae (NTT DoCoMo, Japan) gave a tutorial on "IMT-2000 Network, Operation Support System and Service". They attracted many discussions on the new issues of managing these technologies and the more traditional networks and services.

3. Keynote Speeches

Four keynote speakers shared their visions in the second and third day of the symposium. Raouf Boutaba (University of Waterlooo, Canada) delivered a speech on "Managing the Internet the Telco's Way! ". Martin Creaner (TeleManagement Forum, U.S.A.) gave a speech on "Surviving in Today's OSS industry". Toshitaka Tsuda (Fujitsu Laboratories Ltd., Japan) gave a speech on "Towards the Ubiquitous Network". Jae-Woo Yang (ETRI, Korea) delivered a speech on "Next Generation Access Networks".

Fig.1 Keynote Session

4. Technical Sessions

The main body of the Symposium consisted of eight technical sessions, and two poster sessions. TCP selected 40 papers for presentation in the 8 technical sessions and 16 were selected for poster session presentations. These papers represented the latest results of research and development in integrated management for telecommunication solutions covering major research areas including: XML-based Management, SLA and QoS Management, IP Service Management, Modeling and Case Studies, IP Network Management, MPLS & Optical Network Management, Web-based Management and Mobile & Wireless Network Management. Especially, XML-based management was one of key technical fields which is putting significant impact on the new OSS technology.

5. Special Sessions

The special sessions were held in the second day of the symposium, discussed on "Challenges for Integrated Management" by 10 representatives of various countries from Asia-Pacific, Europe, and United States. The sessions were chaired by Shoichiro Niwa (Hewlett-Packard Japan, Ltd, Japan), and the speakers presented their views, experiences, and future expectations. Nobuo Fujii (NTT, Japan) gave a talk on "Broadband Network, Integrated Management and Standardizations", Teerapat Sanguankotchakorn (Asian Institute of Technology, Thailand) gave a talk on "QoS Strategy for MPLS Environment", Alexander Kostin (Saint-Petersburg State University of Telecomm-unications, Russia) gave a talk on "Planning of Integrated Network and Service Management Systems for the Russian Telecommunications Market", Martin Creaner (TeleManagement Forum) gave a talk on "The Progress of the NGOSS Initiative towards simpler integrated management", Yong-Seak Park (Samsung Electronics Co, Korea) gave a talk on "Integrated Management for the Next Generation Network", Hiroyuki Okazaki (NEC Europe Ltd.) gave a talk on "Challenges in Inter-Operator Network and Service Management", Wilfred Wong (NetTasking Inc. Singapore) gave a talk on "Maximizing IT Efficiency in the Managed Services Provider Environment", Dongsik Yun (KT OSS Lab, Korea) gave a talk on "Operation & Management of KT ADSL Networks", Hideyuki Shinonaga (KDDI R&D Labs, Japan) gave a talk on "Latest Mobile Services and Associated R&D Activities", and Si-Hong Lee (SK Telecom, Korea) gave a talk on "Wireless Internet QoS Management in SK Telecom"

6. Distinguished Experts Panel

APNOMS 2002 ended the three-day event on 27 September with a very interesting distinguished experts panel on the topic of "Integrated Management for Telecommunication Solutions – Process, OSS, and Technology". Chaired by Tai M. Chung (Sungkyun-kwan University, Korea), five panelists, Salah Aidarous (NEC America, USA), Peter Buckner (TCSI Inc, USA), Graham Chen (EPAC Technologies, Australia), Wonhee Sull (SK Telecom, Korea), Makoto Takano (NTT West, Japan), discussed and debated a large range of issues on the APNOMS 2002 theme. These issues included the market and customers requirements, the challenges in next generation OSS, standards, tools and platforms. The most of panelists emphasized the strong need for customer centric, flexible, configurable software technologies in order for customers to increase their revenue The audience also participated in the discussion and debate actively throughout the panel. Through the discussions and debates, the panelists and audience offered different views on future important issues towards the real goal of integrated management.

7. Exhibition

The vendor exhibition program provided an opportunity for vendors to exhibit their latest technologies, tools, platforms, products and systems to support integrated management. This program was also provided an excellent environment for operators, researchers and academics to interact with vendors. 14 companies including Agilent Technologies, Fujitsu Limited, HP, IfeelNet, ILOG KSTEC, KT, Microsoft, nFRAtech Inc., NTT Comware Corporation, Oracle, SmartNet Technology Inc., Ssangyong Information and Communications Corporation, TCSI Corporation and UNISYS participated in the vendor exhibition program.

Fig.2 Exhibition

8. Conclusion

APNOMS 2002 was a very successful symposium. It was well attended and the feedback on all aspects of the symposium organization, in particular, on the technical program was very positive. It contributed to the growth of APNOMS into a very important international symposium. The audience's feedback reinforced the positive aspects of the symposium: the wide participation from the industry in the technical contributors, organizing and program committees; the tradition of special session focusing on experiences and lessens learned by different countries in this region; and the overall collaborative, interactive and friendly atmosphere of the symposium.

For further information, please visit the official web site: http://www.apnoms.org/2002. APNOMS 2003 will be held October 1-3, 2003 in Fukuoka, Japan.

Acknowledgements

8th Asia-Pacific Conference on Communications (APCC2002)

Hidenori Nakazato
Waseda University

1.   Introduction

The 8th Asia-Pacific Conference on Communications (APCC2002) was held in Bandung, Indonesia from September 17 to 19, 2002. Bandung is located about 180 km from Jakarta and can be reached by three hours train ride. It is the provincial capital of West Java and Indonesia's third largest city.

The conference was organized and supported by Department of Electrical Engineering, Institut Teknologi Bandung and Indonesian Society on Electrical, Electronics, Communication and Information. The theme of this APCC was "Information and Communication Technology for Bridging Digital Divide."

The first APCC was held in Taejon, Korea in 1993. Since then, the conference has been organized in Asia-Pacific countries. The 7th APCC was held in Tokyo in conjunction with the 2001 IEICE Communications Society Conference as a part of globalization activity of the Society.

2. Program Overview

Fig. 1   Opening Session

The opening session took place in Institut Teknologi Bandung (Fig. 1). We had speeches from Indonesian government and from Institut Teknologi Bandung in the opening session. Also, we spend a good time listening to traditional Indonesian music and watching traditional dance.

Technical sessions were held in Holiday Inn Hotel, Bandung.   152 papers have been presented in five parallel sessions. Paper subjects were distributed as shown in Fig. 2. The subjects cover every aspect of telecommunications research. As expected, wireless communication was the most popular subject.

Accepted papers were submitted from 12 mostly Asian countries as shown in Fig. 3. A large number of
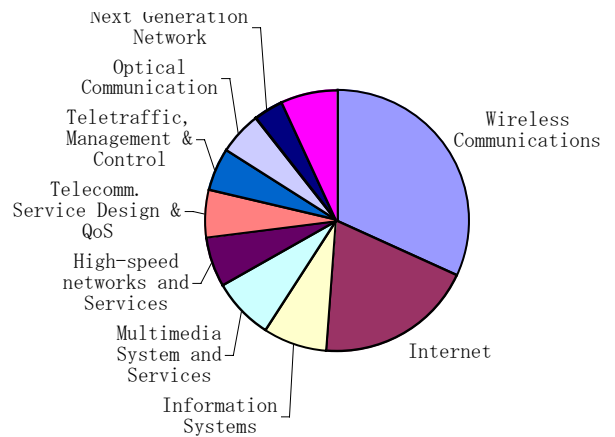
Fig. 2   Accepted Papers by Subject
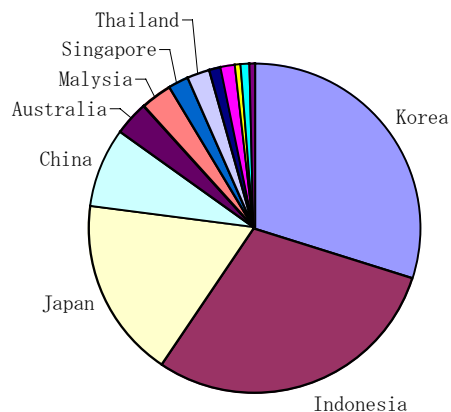
Fig. 3   Accepted Papers by Country

papers were accepted from Korea and the hosting country Indonesia. The other countries not shown in the figure are India, Germany, Saudi Arabia, United Kingdom, and Vietnam.

Distance learning system was another popular topic in addition to wireless in the conference. Both of them are effective technologies to bridge digital divide.

3. Remarks

The next APCC, APCC2003, will be held in a Malaysian resort Penang from 21-24 September 2003. The information will be available at http://apcc2003.upm.edu.my/.

The 2002 Communications Society Conference, 10-13 Sept., Miyazaki University, reported by

Shinichi Nomoto

CS Secretary, Technical Activities and Planning; KDDI R&D Labs.

The 2002 CS Conference has successfully and 'almost' completed. More than one thousand technical presentations were given at Miyazaki University in Kyushu island locating in the southern part of Japan. The Plenary Session and Special Session were relayed over the Internet. Since the multimedia record for the Sessions is now available on Web, the conference is still enjoyable.

1.   Conference Statistics

The number of sessions and presentations are summarized as follows.

- Special session: 1
- Panel sessions: 8
- Tutorial sessions: 4
- Technical sessions (normal):   16
- Technical sessions (symposium):   12
- Aural presentations (normal):   965
- Aural presentations (symposium):   122

The symposia include a couple of English sessions: "Multiple Access and Signal Transmission Techniques for Next Generation Mobile Communications" and "Traffic Engineering in IP-based Network."

2. CS Plenary Session

The Plenary Session was commenced by a keynote address of CS President S. Suzuki and followed by presentation ceremonies of "Acknowledgement to Distinguished CS Contributors of the year," "The 1st Young Engineer Award for English Sessions," and "IEICE Fellow." This year 87 members became IEICE

Fig. 1   Leaflet Prepared by Miyazaki Univ.

Fellows; 25 of those were with CS.

The second half of the session was reserved for a special talk by Mr. Koichi Hori, MBA and CEO of Dream Incubator Inc., who enchanted the audience for a while.

The session was closed by the address of Prof. Y. Sakai, the next President of CS.

3. Special Session

The Special Session entitled "The impact of 'Grid' to Information and Communications" was held on the second day. It reflects increasing interest in the use of networks not just for communication or remote data access, but also for the coupling of computers, instruments, data archives, etc., with each other. Five lectures provided the latest technologies and applications which included collaborative activities over Asia-Pacific area, high-energy physics, and radio astronomy. The session followed in the form of panel discussions. The questions were accepted not only from

Fig. 2   The 1st "Young Engineer Award for English Sessions" was presented to Mr. N. Adachi, Nara Institute of Science and Technologies, by CS President Suzuki at the Plenary Session.

Fig. 3 Mr. K. Hori, CEO of Dream Incubator Inc. ,
presenting a special talk with a gesture.

the floor but also from the Web. There were a couple of questions which were covered during the discussion:

・ What would be implied by integration of Grid computing and Web services?
・ There are some people who say that Grid is a sort of public enterprise (in a negative sense), because buildings (boxes) and/or highways (broadband network) need to be prepared using public investment. Also, it is said that most of Grid applications just accommodate archives. Can any of the lecturers provide a convincing counterargument to those people?

Many comments on the internet program were received,

too, such as
・ It's nice, isn't? I can enjoy the session, which is actually being held at my hometown, from the office in Tokyo.

4. Conference over IP

The CS Plenary Session and Special Session above were both broadcast by live multimedia. The encoded video and audios together with presentation material were relayed over the internet not only to CS members but also to people all over the world. It was somewhat bi-directional and was actually allowed that a remote participant could ask a question as explained previously. The number of accesses is shown in Fig. 5. The first half (in the morning) corresponds to the Special Session, whereas the second half (in the afternoon) corresponds to the Plenary Session.

The record of the Special Session is now available on your demand through CS homepage or directly from

http://www.ieice.org/cs/jpn/soc-conf/02/sympo02/

You can enjoy the streaming record (video/audio/slides all synchronized) on your own demand through either 56kbps (e.g. analogue modem) or 300kbps (e.g. ADSL).

The archive file of Mr. K. Hori's talk is being edited and would be available when this article is published. (If not yet, please be patient.)

Fig. 4 Five Lecturers at the Special Session: Prof. K. Aida, Tokyo Institute of Technology, Dr. Y. Tanaka, Electrotechnical Laboratory, Dr. Y. Morita, High Energy Accelerator Research Organization, Prof. A. Konagaya, Japan Advanced Institute of Science and Technology, Hokuriku, and Prof. M. Ohishi, National Astronomical Observatory of Japan (from left to right).
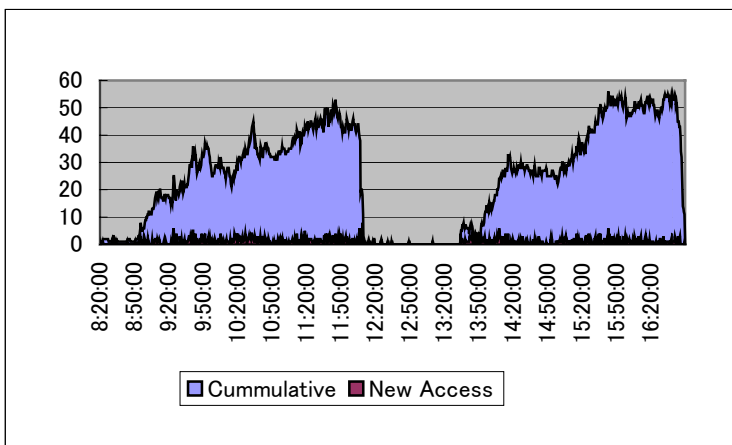

Fig. 5 Temporal Variation of the Number of CoIP Accesses.

So, why not enjoy Miyazaki, again and again!

Close-up of the IEICE Communications Society General Assembly in Miyazaki

Naoaki Yamanaka, Toshio Morioka
NTT Network Innovation Laboratories

1.   Introduction

The 2002 IEICE Societies Conference was held at Miyazaki University on September 10 – 14, 2002. On September 11 during the Conference, the IEICE Communications Society General Assembly was held as described below.

Fig. 1 Dr. S. Suzuki, President of Communications Society

2. Society Contributions Awards

The IEICE Communications Society presented commemorative "Plaques" to 27 individuals for their outstanding contributions to the Society during the fiscal year 2001.

Fig. 2 Society Contributions Awards Ceremony

3. The First Young Engineer Award for English Sessions

The first Young Engineer Award for English Sessions was presented to Naotoshi ADACHI of Nara Institute of Science and Technology for his paper "Simple Cell Scheduling for Application Level Jitter Reduction over ATM-ABR Service" which was presented at the 2001 IEICE Societies Conference in September 2001. The award is designed for the best paper presentation in the English sessions of the IEICE Societies Conferences each year.

Fig. 3 Dr. N. Adachi, the first Young Engineer Award winner for the English Sessions

4. IEICE Fellow Presentation

The IEICE present each year "Fellow" grades to technical professionals for their outstanding contributions to the Societies, and their proficiency and accomplishments in their profession. This year, the IEICE Communications Society awarded the Fellow grades to 25 professionals, the names of which are listed below: Shoichiro ASANO, Yuji INOUE, Yasuhiko ITO, Naoki INGAKI, Takashi KATAGI, Masaaki KAWASE, Kenji KOHIYAMA, Shozo KOMAKI, Michimasa KONDO, Koichi SAKANIWA, Norio SHIRATORI, Matsuo SEKINE, Shuji TASAKA, Yoshiaki TANAKA, Mikio TAKAHARA, Masayuki TANIMOTO, Tasuku TESHIROGI, Toshiyuki TODAKA, Kiyoshi NAKAGAWA, Nobuo NAKAJIMA, Botaro HIROSAKI, Yasushi HORIKAWA, Motoo MIZUSAWA, Hideo MIYAHARA, Yuko MOCHIDA.

Fig. 4. The new Fellow members of the IEICE Communications Society

Fig. 5 Dr. Y. Inoue addresses as a new Fellow

5. Special Lecture by Mr. Koichi HORI

A special lecture entitled "You can overcome any obstacles! – hints for differentiated R&D activities and management", by Mr. Koichi HORI, President and CEO of Dream Incubator Inc. was held over one hour and half with 300~400 participants. The lecture was also broadcast via Internet. Mr. Koichi HORI graduated from University of Tokyo, Department of Law and obtained his MBA with High Distinction from Harvard University. After working for Yomiuri Shimbun, Mitsubishi Corporation, Boston Consulting Group as president, he founded Dream Incubator Inc. The summary of the lecture is summarized as follows:

Fig. 6 Mr. K. Hori in his invigorating special lecture

What is most needed in Japan is creativity. Creativity can be obtained through the following three measures.

(1) Gifted talents:

This corresponds to the talents that an Edison or Einstein possesses. There remains nothing to be done if you happen to have them.

(2) Association:

Most part of creativity is obtained through this process. This "association" method is a process by which one applies to the fields of your own what is common in other fields; Fedex started their "new" business by utilizing the free night hours of Memphis Airport (one of the most advanced airports in the North America) with their 100 aircrafts. They explosively expanded their business by delivering business documents of high priority to their destination on the next day with only 40~50 dollars, saving a businessman a one-day trip of carrying the document. Yamato Transport CO. Ltd. (so-called Kuroneko Yamato) of Japan followed this success. To increase this "association" power, the following measures are useful:

- Be interested in other fields than your own

- Travel, especial in foreign countries
- Always raise questions on the subject of your interest
- Read books, especially novels and books on philosophy and history

(3) Permutations and combinations:

Reexamine the present procedures. Toyota's "just-in-time production system" (so called a "kanban system") and Benetton's strategy in clothing are the two most famous examples. Benetton created a big business by dying the finished clothes of plain colors according to the market demands instead of following the common procedures of dying, spinning, cutting, sewing, and sales.

Other tips for creative R&D and management are:

(1) Allowing multiple methods:

Promote multiple methods, A and B for a while and then decide which is better for the objective. Now is the time for differentiated management and you have to challenge without a fear of failure.

(2) Two principles of imitation:

Creativity is important to avoid the simple cost competition, but mimicking is unavoidable and you have to devise a way to avoid "mimicking" based upon the following three principles.

- Make it impossible to mimic (by law)
- Make it difficult to mimic (by creating a brand image)
- Make your competitors think that they suffer a loss by mimicking

By adopting the above procedures, one has to be able to develop his or her creativity in order to overcome any obstacles and hurdles. What is needed now in Japan is this challenging spirits. This can be applied to politics, big enterprises, and universities, which still have few venture companies.

[Q&A]

Q: Importance of creativity is fully understood. In Japan, it is commonly said that the Japanese culture and education do not always foster creativity from childhood. 50 % the audience here is academic faculty and I have three children. Advice is greatly appreciated for fostering creativity to the educators and parents.

A: A teacher sometimes needs to say that he may be wrong. It is important that the students have the habit of "it is not true?" or "it does not make sense" attitude. Parents likewise make their children think "why is it so?". Of course, teachers, parents, children all have to doubt first and apologize if they are mistaken.

The lecture was very intriguing and informative. Mr. Hori's message was that we promote creativity with challenging spirits and without fear of failure. The technical societies, R&D activities, and universities that needs creativity most should vigorously proceed for the bright future by strengthening this ability.

Research on Wireless Mobile Internet

Abbas Jamalipour
University of Sydney (IEICE oversea member)

1. Introduction

The wireless mobile Internet, which was a dream in just a few years ago, is now progressing so fast that could revolutionize the whole framework of the telecommunication industry. The wireless mobile Internet is not just an extension of Internet into the mobile environment and giving users access to the Internet services while they are on the move. It's about integrating the Internet and telecommunications technologies into a single system that covers all communications needs of human beings. With the extensive progress achieved during the last decade in wireless access technology, switching and routing in the Internet, and sophisticated hardware and software design, such a comprehensive Internet technology would be no longer a dream but a practical reality. Whilst the first cellular-based mobile Internet services such as HSCSD (High-Speed Circuit Switched Data) and CDPD (Cellular Digital Packet Data) and more recent services such as WAP (Wireless Application Protocol), i-mode, and FOMA (Freedom Of Multimedia Access) were provided users with flavors of an actual wireless mobile Internet system, still there is a need for more research to achieve the systematic goals for this network. In this article, some of the main research topics toward the realization of mobile Internet that are studied at the University of Sydney within the author's research group are summarized. A comprehensive text on the future of wireless mobile Internet, enabling technologies, architectures and protocols can be found in [1].

In Section 2 concepts of a layered architecture for the future wireless mobile Internet will be described. Quality of service, traffic modeling and traffic management, mobility modeling and mobility management, wireless transport control protocol, and wireless network protocol will be the subject of Sections 3 to 7. Finally the article is concluded in Section 8.

2. Architectures

Third-generation wireless cellular (3G) systems have been developed for providing data and Internet services in wide area networks. Among all IMT-2000 standards, UMTS [2] and cdma2000 [3] are the dominant ones claiming to provide such services efficiently to mobile users through their 3G cellular handsets. While UMTS has been designed by cellular engineers as an evolution to the GSM, cdma2000 found its way through an enhanced Mobile IP core network, and therefore achieved a more IP friendly environment.

Although UMTS and cdma2000 systems will be the main technologies for the wireless Internet for some time, still there is a need for a network architecture that supports emerging Internet services as they come into practice. Therefore, an open, flexible, air-interface-independent architecture will be required. Mobile Wireless Internet Forum (MWIF) [4] is trying to achieve such goal with collaboration to the 3GPP and 3GPP partners. This would result in a 4G development toward a real wireless Internet.

The layered architecture, shown in Fig. 1, tries to achieve a similar goal by not looking at the underlying technologies or limiting to existing mobile services. It looks at the network as a few blocks with inputs and outputs, where only those blocks and interfaces among them are being standardized. At the heart of this architecture, the network level tries to match the needs of the applications with the capabilities and restrictions of the underlying access technologies, through traffic, mobility and QoS management techniques.

3. Quality of Service

Despite numerous research activities toward
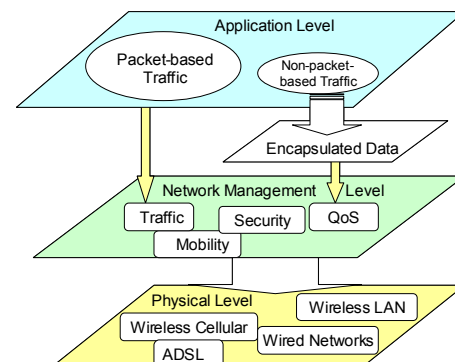
Fig. 1. The layered architecture of the future mobile networks

realization of quality of service in mobile networks as well as Internet, still there is a huge gap between the two network QoS solutions. While the Internet looks at DiffServ and IntServ QoS mechanisms, 2.5G/3G systems follow cellular concepts. The Internet main directions are the integrated services and differentiated services, with more promising views to the latter one, in the context of being practical and feasible. Reservation protocols are named as the means for providing this Internet QoS so that the current best-effort service can be evolved into a variety of services, including the guaranteed service.

QoS must be seen as an end-to-end issue (Fig. 2). In future wireless mobile Internet, while one end could be

a cellular phone, the other end could be a desktop connected to the wired Ethernet. Therefore, the QoS should be provided within heterogeneous networks interconnection. Such interconnection requires more compatibility than those seen in the current solution of QoS provisioning in cellular networks and Internet.
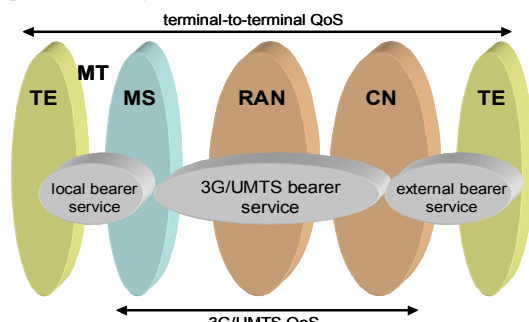

Fig. 2. End-to-end QoS realization in mobile

The diverse approach taken for providing the QoS in the Internet and in the cellular mobile communication systems could cause major problems in future wireless IP networks. The wireless IP needs the both technologies as its foundations and taking different approaches on the same issue in the network would never provide an efficient resolution. Moreover, this will make the end-to-end QoS guarantee very difficult and costly and without an end-to-end QoS solution, we cannot claim any victory in achieving the QoS.

4. Traffic Modeling and Management

Traffic modeling becomes increasingly important in future QoS wireless IP networks. It is indeed vitally important for any communication network in order to perform efficiently and utilize the network resources more appropriately. The topic has been researched for many years in voice-based telephony networks but after the invention of the packet-switched networks and increasing the data applications over the Internet, it was not accordingly followed. In order to provide quality of service in a mobile data network, we need to either design a perfect network by employing appropriate data traffic models or to rely on traffic management techniques, in order to provide quality of service in data networks [5].

Traffic management is a set of policies and mechanisms that allow a network to efficiently satisfy a diverse range of service requests. Admission control, scheduling, buffer management and flow control are all considered as forms of the traffic management. The main issue in traffic management is how to balance the tension between the diversity and efficiency; both are necessary for providing QoS. In order to achieve this main objective, any traffic management scheme has to be efficient enough to prevent and recover from network congestion.

When there is not a good traffic model available during design process of a communication network or when applying an available traffic model makes the network design too complicated, we need to search for other alternatives. Traffic management techniques are considered as appropriate partial replacements to precise traffic modeling. We have studied new data traffic models as well as traffic management schemes for future wireless Internet.

5. Mobility Modeling and Management

We have studied user mobility models and location management techniques as the two main components of the mobility management required in mobile networks. In a wireless network, the users are assumed basically to be mobile, which means that they will change their network point of attachment frequently irrespective that they are idle or active in terms of exchanging data with the network and other network users.

The user of a mobile cellular network may experience two types of mobility in the network. The first one is a terminal mobility which means that the mobile device frequently changes its network point of attachment during the movement and while an active session is ongoing. Some cellular systems such as GSM also provide a personal mobility, which is realized by the inclusion of a subscriber identity module (SIM) card in their systems. A user can remove the SIM card from one terminal and insert it to another GSM-compatible terminal and still receive the same type of services from the cellular network, getting a personal mobility in addition to terminal mobility.

Giving the increasingly interests in the deployment of an all-IP network, it is significantly important to identify a location management technique capable of providing the required QoS measures in the world of wireless IP networks. In terms of the basic design criteria, a great similarity is evident between cellular systems and IP networks in their respective path of evolution. In fact, the resemblance is so strong that it seems promising to reapply some of the well-developed operational philosophy in cellular technology to the vision of an all-IP network.

Developing an efficient location management technique is an important step in research towards the optimal solution to the problem of mobility. In order to provide an optimal solution for all users, a multimode technique should be implemented such that a different location tracking strategy is chosen to optimize the performance for the defined mobility characteristics and network conditions [6].

6. Wireless Transport Protocol

While it is usually assumed that the efficiency of the higher layer protocols are independent of their underlying protocol layer in a TCP/IP network stack, it is not really true in case of the transport layer. TCP makes strict assumptions on the reliability of the lower network layers, might be because it has been designed for wired networks with such reliable channels. If the traditional Internet's transmission control protocol is used in an error-prone wireless network, the congestion control algorithms deployed in the TCP cause an

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unacceptably low throughput and large delay performance.

Cellular wireless systems such as the 2.5G GPRS and the 3G UMTS and cdma2000 that provide data services such as Internet access has specific characteristics that determine the choice of transport protocol. The first characteristic is their latency range. The cellular systems because of extensive processing delays at their physical layer such as interleaving and other transmission delays at their radio access network introduce high latencies. The typical values for RTT latency in those systems varies between a few hundred msec and one second [7].

The data rates provided by the cellular networks are also different and usually asymmetric on uplinks and downlinks. A GPRS system, for example, has data rates of 10-20 Kbps in uplinks and 10-40 Kbps in downlinks. 3G systems will improve these figures to 64 Kbps in uplinks and 384 Kbps in downlinks in their initial implementations. Therefore, the bandwidth-delay product of the cellular networks will be between 1-5 KB for GPRS and 8-50 KB for 3G. Such a link in a GPRS network is said to be long thin and in a UMTS network long fat.

For both types of the link in cellular networks, a good TCP performance will be possible by using large-size congestion windows. Loss recovery in long thin networks requires particularly a long TCP congestion window. Based on these observations, in [7] TCP Selective ACK and TCP ECN are therefore recommended for cellular network, both for long thin and long fat networks. In case that the SACK is not available, then TCP New Reno should be used in those networks. Nevertheless, an appropriate TCP congestion window size selection has significant role in performance of TCP in cellular network. The window size needs to be chosen in accordance to the cellular network bandwidth-delay product. In case that the TCP specifications limit the choice of appropriate window size (e.g., as TCP limits the receiver window size to 64 KB), some other schemes such as the window scale option can be used.

7. Wireless Network Protocol

Network layer has a distinguishing role in realization of future wireless IP networks, and more generally, in any data packet network. The network layer functionality could determine the efficiency of wireless system and its performance in terms of quality of service parameters. The main part of the network layer is the network protocol. In today's Internet, this is the Internet Protocol (IP) that sits as the network protocol.

In order to provide Internet users with services while they are moving, there are three alternative solutions. Those solutions come within the application layer, the network layer, and the link layer. Domain name server (DNS) is an example of an application layer protocol that can address the mobility of the Internet users. Similar to DNS capability in matching the alphabetical address of a server with its current numerical IP address, we may think of this that during the movement of an Internet host, the database entries in the DNS are updated regularly to illustrate the new IP address. The problem with this method is that the DNS database-updating load becomes extremely high when there are frequent movements by users. A new alternative for DNS for handling the user mobility at the application layer is undergoing within the IETF under the title of session initiation protocol (SIP).

The link layer alternative wants to make the user mobility be invisible by the network layer. Therefore, similar to the application layer approach by using DNS capabilities, in this method an appropriate mapping between the host IP address and the link-layer address (e.g., an Ethernet address) is performed through the link-layer entities, such as the address resolution protocol (ARP). There are some limitations for this technique as the link layer has a close relationship (interface) with its underlying physical layer, therefore making the technique inapplicable for user mobility between different technologies. The scalability of the link-layer mobility techniques is also under question.

Different from those approaches, we try to investigate efficient IP mobility at the network layer, using enhanced features in IPv6.

8. Conclusions

In this article, a summary of most important issues toward realization of the wireless mobile Internet has been provided. We believe that unless sufficient developments can be achieved in those areas, the mobile Internet would not have a feasible meaning. Recent activities within the IETF and 3G organizations though have great significance toward the ultimate goal, need more support to be provided by researchers within academia and industry.

9. References

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Good Ideas Have No Borders

Werner Creixell

Graduate School of Information Science and Technology

The University of Tokyo

To start I would like to congratulate the Institute of Electronic, Information and Communication Engineers for the idea to open to the world in this second edition of its Global Newsletter. Second I would like to introduce myself, I am an electronic engineer major in Telecommunications with a master degree in Computational and Telecommunication Systems from Chile. I am currently a doctor course student at Sezaki's Laboratory at the University of Tokyo, and I came to Japan last year in April, under the support of the Mongakabusho scholarship. I first joined the Laboratory as a research student, and during my first year I have been focusing on two tasks: to join the doctor course and to master the Japanese language. The later one is still in progress, I must confess.

Fig. 1   A summer afternoon with Professor Sezaki and lab mates.

My experience in Japan

This is not the first time I have had the opportunity to live in Japan. Three years ago I worked for a Japanese company for one year in the multimedia, which was a great experience and my starting point in Japanese society and culture. At that time I had to learn our cultural the differences in the working environment. It was difficult because of my complete ignorance about Japan, its people and its culture, and also because of my inexperience facing any culture different than my own. This is not a minor problem; these differences affect a wide variety of things. We are not even aware of our own customs until we face a strange culture and in comparing we learn about ourselves. As a small example of our differences, in Chile when you first meet someone people are very friendly and help the person who is new to the environment such as at work or lab. We give new people a large amount of trust, and if they disappoint us we reduce that amount of trust. But in Japan, even though people are very kind they are not very friendly from the beginning. The new person receives a small amount of trust and according to their behavior they can receive more trust. It is completely opposite behavior, and people expect to be treated in that way but are not, they became disappointed and frustrated. So what is the right attitude for us, the foreigners? Patience. If we wait a couple of months, then the relationship with our Japanese colleagues will surely improve.

As a student in a very different position, as last time. I have tried not to make the same mistakes and continue learning about Japan.

First steps in research

I have studied Electronic Engineering and have a master degree in telecommunications and computational systems from Santa Maria University in Chile. During those years of study I learned many subjects from diverse fields.

When I chose the engineering career I was motivated by two ideas: the curiosity to understand the world and how it works, and the knowledge to be able to create. The first desire was partially fulfilled in my lectures, but the second one has remained almost completely unsatisfied, I developed this skill to some degree through my studies, as was necessary, however merely to the point of adapting existing solutions to particular problems. It was only during thesis work for my master degree that I had the first chance to partially do creative work evaluating different multicast routing algorithms. Now I finally have the chance to research and propose original solutions to existing problems. Due to my lack of research experience, I try not to spread myself in this matter. I am sure that most of the readers have a deep and exhaustive knowledge of research, and spite of my handicap I would like (with the readers forgiveness) to express my opinion and describe what I have found in this short time. When I first spoke with my advisor, Professor Sezaki, about how to start my research, and how to choose an appropriate research subject the answer was different than I expected: "The selection of a research subject is part of your formation", which meant that I had to choose a research subject by myself. I was a bit disoriented by that answer, then I realized that instead of a problem it was an opportunity to experience for myself the process of investigation from phase one. During that time I received a visit from a Chilean friend who was finishing his PhD in England

and one of his comments made me think more about this dilemma. He said that he wanted to experience how to create a research project from the beginning, but after all the research he had done to get his degree he would not have the chance to start from zero. This left him without the confidence he needs when he has to start researching on his own. Thinking of this I realize that I was learning from the beginning one of the most important and difficult task in research: how to take the first step. There is no infallible rule to guide us on this. It is like a step in the darkness, and the only light that we have is our intuition. As Albert Einstein elegantly said: "The intuitive mind is a sacred gift and the rational mind is a faithful servant. We have created a society that honors the servant and has forgotten the gift". My professor was completely right, because I went to him looking for an advice based on his long experience and I was not trusting in my own intuitive ideas.

Pursuing

I decided my subject and started the next step: to propose an innovative idea. It is here we can be helped by the rational mind to reach our goal. Such ambitious objectives are not exactly easy; they demand rational work and again an intuitive vision. I am currently in this process and feel like an "idea hunter". The inspiration to think an idea is not systematic and it's not an individual privilege. A question naturally arises: Who can have an innovative idea? The answer is anyone. It doesn't depend on experience, cultural background, or even what it's called "intelligence". Therefore the problems and ideas must be discussed with people to enrich our point of view with other's opinions and in that process increase the possibility of inspiration. I think these should be one of the primary objectives of universities, societies like IEICE or any organization pursuing the creation of knowledge. In this respect, I believe different people with different ways of thinking can open doors for more and better ideas, and I am certain that the decision made by IEICE to open to the world is the a most wise one.

Aoyama-Morikawa Laboratory at the University of Tokyo

Hiroyuki Morikawa (mori@mlab.t.u-tokyo.ac.jp)
Department of Frontier Informatics, The University of Tokyo

The Aoyama-Morikawa Laboratory of the University of Tokyo is a research group in the Department of Information and Communication Engineering and the Department of Frontier Informatics. We study systems and strategy issues related to new generation Internet, ubiquitous network / computing, mobile computing / Internet, distributed computing, photonic Internet, and P2P networking. Our goal is to define network architectures, protocols, applications, and systems for future information utility for all levels of network design, ranging from photonic Internet to network-oriented applications and services.

Vision – '3C everywhere' and 'physical interaction'

We envision '3C everywhere' and 'physical interaction' as a future network environment. '3C everywhere' consists of 'computing everywhere', meaning every object has embedded processors, 'content everywhere', meaning files, data, and applications are ubiquitous within networks, and 'connectivity everywhere', meaning all objects are connected to networks via heterogeneous links at all time.

'Physical interaction' connects the physical world to pervasive networks of sensor-rich, embedded computation. We seek to develop new methodologies and information infrastructure so that interacting with information, devices, and other people in 3C everywhere and in the physically connected world will become much more convenient.

People

The number of people in our research group is forty-four as of September 2002.

Prof. Tomonori Aoyama
Prof. Hiroyuki Morikawa
Dr. Masateru Minami (Research Associate)
Mr. Koji Watanabe (Research Associate)
Ph.D students: 10
M.E. students: 20
B.E students: 8
Administrative staffs: 2

Among these, ten graduate students are from foreign countries: China, Korea, Thailand, Vietnam, Sri Lanka, and Senegal. We have also visiting professors and researchers.

AML Style…

I showed the lists to newcomers to get the feel of Aoyama-Morikawa Laboratory at the first lab meeting in April… The following is a part of the lists :-) Just FYI…

✓ Say something vivaciously and freely
✓ Be confident
✓ Have one's own opinion
✓ Carry out one's word
✓ Enjoy the friends
✓ Accept criticism
✓ Have a broad outlook
✓ Plan events such as parties, camps, sports, hiking...
✓ Avoid 'research for research'
✓ Avoid writing a 'junk paper'
✓ Find a research topic to open up new areas
✓ …

Please feel free to let me know when you like to add some other items!!!

AML Calendar…

The major events of our laboratory are as follows.

April: Welcome party
July: Open house of our department (we have to prepare demos, demos, demos…)
August: Summer camp
November: AML forum (we have to prepare presentations and demos again. AML forum is for our collaborators to access to our research results and to engage in open dialogue with each other)
January and February: Thesis, thesis, thesis…
March: Ski camp and farewell party

In addition to these, all members attend three-hour weekly meetings for updating the research status, discussing research issues, and sharing information.
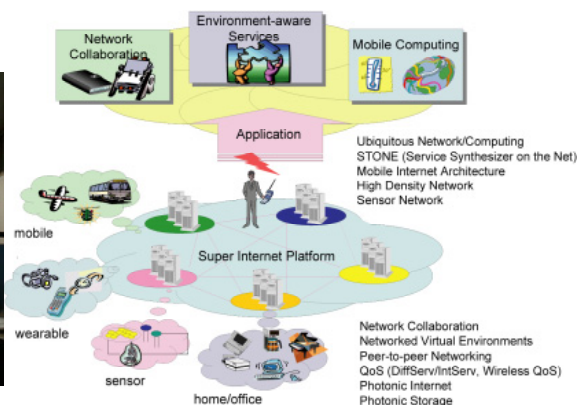
Sponsored/Joint Projects and Collaborators

The research activities of the Aoyama-Morikawa Laboratory are sponsored both by government research grants and by industrial collaborators. The following is a sponsored/joint research project list as of September 2002.

- ✓ Meta-network Architecture (Japan Society for the Promotion of Science "Research for the Future Program")
- ✓ Super Internet Platform (Telecommunications Advanced Organization of Japan, "Innovative Network Project")
- ✓ Optical Burst Switching for Photonic Internet (Telecommunications Advanced Organization of Japan, "Advanced Telecommunications Project")
- ✓ Japan Gigabit Network (Telecommunications Advanced Organization of Japan, Makuhari Gigabit Research Center)
- ✓ ITS Networking (Telecommunications Advanced Organization of Japan)
- ✓ ON*Vector (Univ. Illinois, NTT)
- ✓ .HOME (Information-technology Promotion Agency, Keio U., Waseda U.)
- ✓ Semantic Network Architecture (Japan Society for the Promotion of Science)
- ✓ Context-aware Mobile Internet Architecture (Japan Society for the Promotion of Science)
- ✓ Peer-to-peer Content Discovery in Distributed Environment (Japan Society for the Promotion of Science)
- ✓ Development of Ubiquitous Information Technology by Cross-section Approach (Japan Society for the Promotion of Science)

In addition to these research projects, we collaborate with industries including Ericsson Japan, Fujikura, Fujitsu Laboratories, KDDI R&D Laboratories, Mitsubishi Electric, NEC, Nokia Japan, NTT, NTT DoCoMo, NTT East, Oki Electric, and Ricoh. We would like to thank these organizations and companies for their sponsorship and continued support!

Ubiquitous Networking Group

The goal of this project is the research and development of key ubiquitous networking technologies for supporting human activities in the 3C everywhere environment where resources, such as computing resources, electrical devices, contents and network access links, are ubiquitous.

We are developing an application platform that includes a naming service and a service synthesis mechanism, and are designing and implementing an indoor location system and sensor network protocols.

In addition, we research and develop distributed storage and distributed search technologies that are necessary for constructing a scalable and robust infrastructure which will allow users to access contents transparently.

STONE room: Finding killer applications in a ubiquitous networking and computing environment is quite difficult. One approach is to implement several kinds of prototype applications, which will be refined through daily use. Towards this, we have developed STONE room which is located outside the university campus.

STONE room is a testbed for indoor ubiquitous networking and computing applications, in which various hardware devices (e.g., light, audio/visual devices, and robots) and software components are interconnected through an IP network. In the STONE room, we are attempting to find killer applications and to create practical application scenarios.
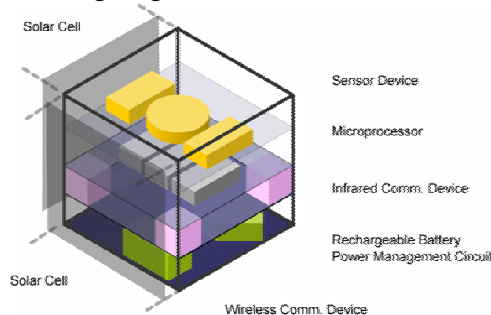
Research topics:
- STONE: An application platform technology for the ubiquitous computing environment
- Dolphin: Distributed object locating system for physical-world internetworking
- Sensor and robot network architecture and testbed
- U3: A tiny networked sensor module
- Distributed content location
- Distributed content search
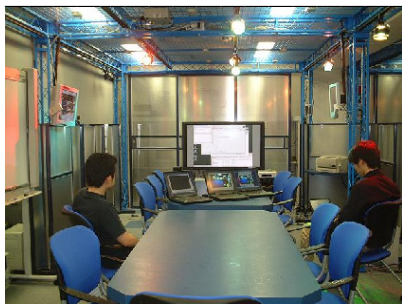
Mobile Networking Group

The goal of the mobile research group is to develop a flexible service framework in a ubiquitous environment that takes the context of the user and the environment into consideration in order to provide the flexible network services to the users.

We are investigating a service-oriented mobility
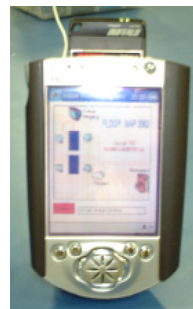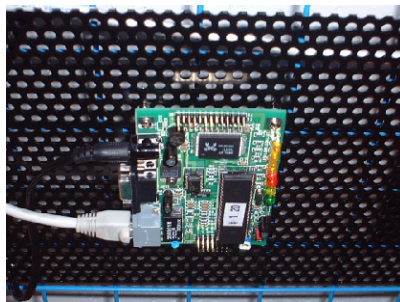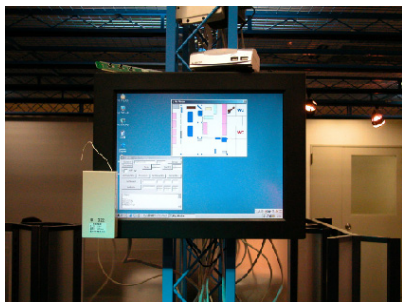
support mechanism in which service is adaptively handed-off across multiple devices. Specifically, research topics include session layer mobility, fast handoff, service handoff, a services and resources discovery mechanism, and network security and privacy. In addition, we are investigating a flexible user-oriented service framework in which the service is flexibly provided to the user by 'connecting' resources through 'personal mesh', high-density network, and wireless QoS technology.

Research topics:
- End-to-end mobility support
- Service mobility support
- Personal mesh
- Mobile CDN
- On-demand data prefetching system
- Wireless QoS scheduling
- High-density network

Network Architecture Group

Since the development of Internet architecture in the 1970's, various new mechanisms have been added in order to meet new requirements.. We believe that now is the time to revisit the Internet architecture, in order to determine whether the architecture can be better aligned with current and future requirements.

The goal of architecture group is to rethink the design of Internet and to provide innovative network architecture in terms of photonic technologies and application technologies. In particular, we are developing burst photonic network architecture and focus on contention resolution issues such as deflection routing and priority-based wavelength assignment. In addition, we are investigating naming and routing mechanisms, end-system multicast, peer-to-peer network games, and application-oriented overlay network.

Research topics:

- Burst photonic network
- Photonic storage
- RelayCast
- Collaborative multi-party videoconference system
- SCAMPI: Scalable multiuser community place on the Internet
- BBStream: Streaming in high-speed network

IEICE Activities…

We are actively involved in IEICE Communication Society. Every student has to submit a paper to 'IEICE general conference' and 'IEICE society conference'. We are also involved in many technical groups and society events such as panel discussions and tutorial presentations. Recently, we have launched two technical groups, 'New Generation Networking' and 'Photonic Internet', for providing opportunities to have an open discussion of new research topics.

In addition to IEICE, we are involved in IPSJ, IEEE, ACM, and international conferences. Our members are encouraged to 'go out' to stay in close touch with other researchers. Ph.D students are encouraged to attend prestigious international conferences…

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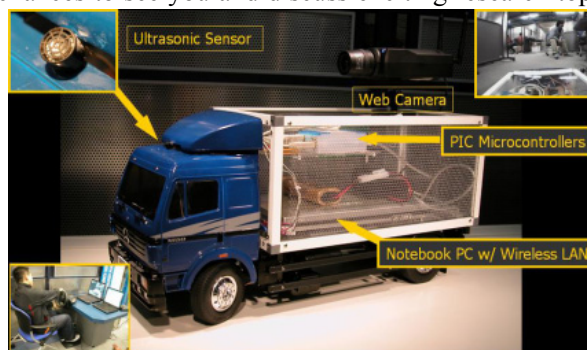
IEICE Overseas Membership Page

The Institute of Electronics, Information and Communication Engineers
Membership for Overseas Candidates: **You can join one of the IEICE Societies and subscribe to IEICE Transaction (in English) of the registered Society as** IEICE Overseas Regular Member, Overseas Student member, or Overseas Affiliate Member **without voting right at the Institute's election. Still more, you can receive Journal and Japanese Transactions by paying an additional charge.** OMDP **(Overseas Membership development program) is provided for candidates from** countries/areas in Asia, Africa, Central America, and South America. **This program is designed so that IEICE can contribute to and support the progress of science and technology throughout the world. Scientists and engineers in these countries/areas are encouraged to apply to the program.**
◆Please be noticed that Overseas Membership applies only to candidates who reside outside of Japan and who have non-Japanese citizenship.

IEICE Societies and Publications:

Societies	Transactions	Topical areas covered
A. Engineering Sciences	EA:Trans. on Electronics	Engineering Acoustics, Noise and Vibration, Speech and Hearing, Ultrasonics, Digital Signal Processing, Analog Signal Processing, Systems and Control, Nonlinear Problems, Circuit Theory, VLSI Design Technology and CAD, Numerical Analysis and Optimization, Algorithms and Data Structures, Graphs and Networks, Reliability, Maintainability and Safety Analysis, Cryptography and Information Security, Information Theory, Coding Theory, Communication Theory and Signals, Spread Spectrum Technologies and Applications, Mobile Information Network and Personal Communications, Intelligent Transport System, Image, Vision, Computer Graphics, Language, Thought, Knowledge and Intelligence, Human Communications, Neural Networks and Bioengineering, Multimedia Environment Technology, Communication Environment and Ethics, Concurrent Systems, Measurement Technology, General Fundamentals and Boundaries
B. Communications	EB:Trans. on Commun.	Fundamental Theories, Communication Devices / Circuits, Transmission Systems and Transmission Equipment, Optical Fiber, Fiber–Optic Transmission, Wireless Communication Technology, Terrestrial Radio Communications, Satellite and Space Communications, Optical Wireless Communications, Switching, Wireless Communication Switching, Network, Network Management / Operation, Software Platform, Internet, Antenna and Propagation, Electromagnetic Compatibility (EMC), Sensing, Navigation, Guidance and Control Systems, Energy in Electronics Communications, Terminals, Multimedia Systems, Broadcast Systems, Integrated Systems, Media Compound Method
C. Electronics	EC:Trans. on electron.	Electromagnetic Theory, Lasers, Quantum Electronics, Optoelectronics, Microwaves, Millimeter–Waves, Ultrasonic Electronics, Electronic Circuits, Electronic Materials, Organic Molecular Electronics, Electronic Components, Electromechanical Devices and Components, Semiconductor Materials and Devices, Integrated Electronics, Electron Tubes, Vacuum and Beam Technology, Electronic Displays, Superconducting Electronics, Storage Technology, Electronic Instrumentation and Control
D. Information and Systems	ED:Trans. on Inf. & Syst.	Theory/Models of Computation, Theory of Automata, Formal Language Theory, Algorithms, Computational Complexity Theory, Computer System Element, VLSI Systems,Computer Systems, Theory and Models of Software, Software Systems, Software Engineering, Databases, Network, Fault Tolerance, Applications of Information Security Techniques, Cooperation in Distributed Systems and Agents, Artificial Intelligence, Cognitive Science, Man–Machine Systems, Multimedia Processing, Educational Technology, Welfare Engineering, Pattern Recognition, Speech and Hearing, Image Processing, Image Pattern Recognition, Computer Graphics, Multimedia Pattern Processing, Natural Language Processing, Biocybernetics, Neurocomputing, Medical Engineering

Membership Charges (UNIT: YEN):

Membership grades	Entrance Charge	Annual Membership Fee	Additional Society Registration	Additional Transaction Subscription	Journal Subscription
Service coverage for overseas members	⎯⎯⎯	Included one Society and its Transaction	Registration of one more Society and its Transaction	Subscription to an additional Transaction of registered Society	(Written in Japanese only)
Regular Member (overseas)	1,400	7,000	3,500(/1 Trans.)	3,000(/1 Trans.)	6,000
Regular Member (overseas) with OMDP*	1,000	5,000	3,000(/1 Trans.)	2,500(/1 Trans.)	5,000
Regular Member (in Japan)	2,600	13,000	3,500(/1 Trans.)	3,000(/1 Trans.)	-
Student Member (overseas)	0	2,000	2,000(/1 Trans.)	1,500(/1 Trans.)	6,000
Student Member (overseas) with OMDP*	0	1,000	1,500(/1 Trans.)	1,000(/1 Trans.)	5,000
Student Member (in Japan)	0	4,500	2,000(/1 Trans.)	1,500(/1 Trans.)	-
Affiliate Member★ (overseas)	800	4,000	3,000(/1 Trans.)	2,500(/1 Trans.)	6,000
Affiliate Member★ (overseas) with OMDP*	400	2,000	2,500(/1 Trans.)	2,000(/1 Trans.)	5,000
Associate Member★ (in Japan)	1,800	9,000	3,000(/1 Trans.)	2,500(/1 Trans.)	-

*OMDP is to support members from countries/areas of Asia, Africa, Central America, & South America.
★Affiliate Member is a person who is not a specialist of fields which IEICE subject to and who have an interest to our fields. And when you want to
join IEICE as an Affiliate Member, you need recommendation of the society which you want to belong to.

Notice

1. Annual Membership Fee includes one Society and one Transaction which you choose.
   Example : If you want to subscribe to Transaction of EA, please check **Society Registration** as "A", and your membership fee amounts to 7,000 yen / 5,000 yen.

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

3. If you want to subscribe to more than one Transaction in the same society which you register, please check "Additional Transaction subscription".

Example : If you want to subscribe to Transaction of EA and A, please check **Society Registration** as "A", and **Additional Transaction subscription (optional)**

as "A". Your membership fee amounts to 7,000+3,000 yen / 5,000+2,500 yen.

4. If you want to change membership from "Regular Member" to "Overseas Member", you don't need to pay an Entrance Charge.

Optional Rapid Mailing Service: Surface mail charge is included in the Annual Membership Fee. Optional rapid mailing service is available by air mail or surface air lifted (SAL) mail. The additional charge per year periodical depends on the mailing address, as shown in the following table.

Zones	Areas	Air mail	SAL mail
1st	Asia; Guam; Midway islands	5,600 yen	3,200 yen
2nd	Oceania; Near & Middle East; North & Central America; Europe	7,800 yen	4,400 yen
3rd	Africa; South America	11,000 yen	5,600 yen

Further information: Please contact **IEICE Membership Activities Section;**
IEICE Headquarters Office,
Kikai-Shinko-Kaikan Bldg., 5-8, Shibakoen 3 chome, Minato-ku, Tokyo
105-0011 JAPAN
Fax +81 3 3433 6659   E-mail: member@ieice.org   URL: http://www.ieice.org/

IEICE Overseas Membership Application Form
The Institute of Electronics, Information and Communication Engineers
URL http://www.ieice.org/eng/member/OM-appli.html   **E-mail** member@ieice.org

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

Personal Information   ☐Male

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

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

Mailing Address ☐Home ☐Office

Name of Company/School/College   Department/Section

Street   City   State/Province

Postal code   Country

TEL   FAX   E-mail

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

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

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

Application Information   I want to enter the IEICE from ☐April ☐October year:____

Membership: I want to apply for the following membership (check one item!)
      ☐Regular Member (Overseas) ☐Student Member (Overseas) ☐Associate Member (Overseas)
          ◆If you want to apply for OMDP, please check; ☐OMDP (Overseas Membership Development Program)

Society registration (It includes one Transaction in English):
      ☐A: Engineering Sciences ☐B: Communications ☐C: Electronics ☐D: Information & Systems

Additional Society registration (optional):   ☐A: Engineering Sciences ☐B: Communications ☐C: Electronics ☐D: Information & Systems
Additional Transaction subscription (optional): ☐EA: Fundamentals ☐EB: Communications ☐EC: Electronics ☐ED: Information & Systems
          ☐A (Japanese) ☐B (Japanese) ☐C (Japanese) ☐DI (Japanese) ☐DII (Japanese)
Journal subscription (optional)   ☐(Japanese)

Remittance Remittance is available only in *Japanese yen* by a *credit card*
Entrance charge..........................._____ Journal subscription (optional)..................\   _____
Annual charge..........................._____ Mailing option: ☐Air mail….................... \   _____
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                    Total remittance……………………………….\   _____

Credit Card: ☐MasterCard ☐VISA ☐American Express Card number:_____Expiry date(Y/M)____/

            Credit Card Holder:_____   Signature:_____

Endorsement *Endorsements by two IEICE Regular Members for Regular/Affiliate Member application and by one Regular Member for Student 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

Endorser's name   Membership number   Endorser's signature   Date

Send this form to: **The Membership Activities Section,**
IEICE Headquarters Office, Kikai-Shinko-Kaikan Bldg., 5-8, Shibakoen 3 chome, Minato-ku, Tokyo 105-0011 JAPAN

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Call for Papers

Special Issue on

Software Defined Radio Technology and Its Applications

The Institute of Electronics, Information and Communication Engineers (IEICE) Transactions on Communications is pleased to announce that it will publish a special issue entitled "Special Issue on Software Defined Radio Technology and Its Applications" in **December 2003**. The software defined radio is based on a common platform and its performance can be reconfigured by modifying the software. Progress respecting digital signal-processing devices such as FPGAs, DSPs, and A/D & D/A converters has spurred development of software defined radio technology to the point where it is poised to be widely adopted for radio wave monitoring, broadcasting, mobile communications, ITS, etc. With a view to promoting further progress of R&D in this field, the special issue will present the latest work on software defined radio technology and its applications.

1. Scope

The topics of interest include, but are not limited to, the following areas:
- broadband and multi-band antennas
- adaptive antennas, signal processing antennas
- broadband, multi-band, adaptive analog circuits and devices
- high speed, broadband, adaptive analog to digital and digital to analog converters
- reconfigurable devices, signal processing devices
- adaptive modulation and demodulation, coding and signal processing
- blind signal detection
- radio architectures, application programming interfaces
- software, operating systems and description languages for software defined radio
- security for software defined radio
- ICs or LSIs designed for software defined radio
- hardware platform for software defined radio
- evaluation results of software defined radio, experimental models, prototypes
- software defined radio application systems and services
- software defined radio technology for next generation wireless communications
- roaming technologies among different networks
- software download technology
- application of software radio technology for wireless test systems
- surveys relating to software defined radio technology and its applications.

2. Submission Instructions

Submitted papers will be reviewed by referees in accordance with the regular rules of the Transactions Editorial Committee. The length of a paper should not exceed eight printed pages. The style guidelines are available at http://www.ieice.org/eng/shiori/mokuji.html. Prospective authors are requested to submit four copies of the complete manuscript together with the full address of the contact author, including telephone number, fax number and e-mail address. "Special Issue on Software Defined Radio Technologies and Its Applications" should be written at the top of the first page and underlined in red.

3. Paper Submission Deadline

Papers must be submitted by **March 28, 2003**.

4. Submission Address

Authors are requested to send papers to the following address:

Yukitoshi Sanada   Dept. of Electronics and Electrical Engineering, Keio University
                 3-14-1 Hiyoshi, Kohoku, Yokohama, 223-8522, Japan
                  Phone: +81-45-566-1427, Facsimile: +81-45-566-1427 ,E-mail: sanada@elec.keio.ac.jp

5. Special Issue Editorial Committee

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* Please note that if accepted for publication, all authors including authors of invited papers, are required to pay the page charges covering part of the cost of publication. Authors will receive 100 copies of the reprint.

Call for Papers

IEICE/IEEE Joint Special Issue on Assurance Systems and Networks

The IEICE Transactions on Communications and Transactions on Information and Systems announce a forthcoming IEICE / IEEE joint special issue on "Assurance Systems and Networks" to be published in **October 2003**.

The Autonomous Decentralized Systems (ADS), born in Japan, have technologically evolved in control systems and information systems. It has been applied in many actual systems, and it has progressed in standardization activities. IEICE and IEEE published joint special issue on "Autonomous Decentralized Systems and Systems' Assurance" in October 2001. However, after that, ADS technology has been making drastic improvement, and innovative new research is being reported successively.

Recently, assurance systems are widely noticed as new system technology. Assurance system yields synergistic effects by cooperation of heterogeneous systems which satisfy heterogeneity of requirements and adaptability to change of circumstances. Research Meeting on Assurance System has been started in June 2000 under the Technical Group on Dependable Computing. In United States, IEEE, DARPA, industries and universities established High-Assurance Systems Engineering Symposium (HASE). This year some members from Technical Group on Information Networks and Technical Group on Dependable Computing founded the International Workshop on Assurance in Distributed Systems and Networks (ADSN). The first ADSN (ADSN 2002) was held in July, 2002, and furthermore, ADSN 2003 will be held in May, 2003. It is very difficult to realize Assurance Systems with conventional Fault Tolerance Technology and High Reliability Technology. Hence, ADS is expected to be promising as the core technology for Assurance Systems substituting conventional technologies.

The objective of this Special Issue is to discuss new technologies in the field of Assurance System through papers. The special issue solicits paper submission not only from people who presented new technologies in the International Symposium on High Assurance Systems Engineering (HASE) 2002 in October 2002 and the International Workshop on Assurance in Distributed Systems and Networks (ADSN) 2003 but also from people who are interested in this field. Suggested topics include but are not limited to the followings.

- Autonomous decentralized systems;
- Information service system architecture;
- Intelligent network / The Internet / Ubiquitous network;
- Heterogeneous distributed information / control systems;
- Mobile agents / computer-supported cooperative works;
- Distributed software development and maintenance;
- Fault tolerance, on-line expansion and on-line maintenance;
- Object management architecture / design pattern / application framework;
- Novel applications: electronic commerce, production systems, supply chain management, intelligent transport systems, traffic and transportation control, aerospace systems, logistics systems, medical systems, electronic government, etc.

The submitted papers will be reviewed by referees according to the ordinary rules of the Transactions Editorial Committee. Prospective authors are requested to submit four copies of complete manuscript, the length of which is recommended to be within 8 printed pages, on or before **February 28, 2003**, to the following address. "Special issue on Assurance Systems and Networks" should be placed on the top of the first page in red ink.

Secretariat of Special issue on Assurance Systems and Networks
Shinji Inoue
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Accepted paper will be carried on one of Transactions on Information and Systems or Transactions on Communications, and the other will carry the title, authors, and abstract. Author selects the transaction that carries the paper. However, editorial committee may change it.

*Please note that if accepted, all authors, including authors of invited papers, will be requested to pay for the page charges covering partial cost of publication. Authors will receive 100 copies of the reprint.

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