

## *IEICE Communications Society* GLOBAL NEWSLETTER *Vol. 8* Contents

○ Message from President	
<a href="#">Message from President</a> .....	2
Yoshihiko Akaiwa	
<a href="#">通信ソサイエティ新会長ご挨拶</a> .....	3
赤岩 芳彦	
○ IEICE Activities NOW	
<a href="#">2003 Society Conference: Communications Society Special Event How can information and communication technologies contribute toward realization of safety and comfortable community?</a> .....	4
Naoki Kato, Kuniharu Himeno	
<a href="#">“Terrestrial Digital Broadcasting Service is Now Available” -- A Report on the Panel Discussion</a> ...	6
Youichi Fukada, Iwao Sasase, Yoichi Maeda, Hiroshi Tomonaga, Miki Hirano, Hiroshi Yamane	
<a href="#">Internet Architecture (IA) Technical Committee</a> .....	7
Hiroshi Esaki, Kenichi Nagami, Jun Ogawa, Yutaka Nakamura, Satoshi Katsuno	
<a href="#">The 17th symposium on Optical Communication Systems “Photonic Network Innovation anticipated in the future Japan”</a> .....	9
Joji Maeda, Eisuke Sasaoka	
○ IEICE Sponsored Conference	
<a href="#">Communications on The Islands</a> .....	12
Masayuki Takahashi, Hirohiko Sato	
<a href="#">Managing Pervasive Computing and Ubiquitous Communications:A Note from APNOMS 2003</a> ...	14
Kenichi Mase, Nobuo Fujii	
○ From Laboratories	
<a href="#">Photonic Internet Lab.:New challenges for archiving GMPLS de facto standard</a> .....	16
Naoaki Yamanaka, Akira Misawa	
○ IEICE Information	
<a href="#">IEICE Overseas Membership Page</a> .....	19
<a href="#">IEICE Overseas Membership Application Form</a> .....	21
<a href="#">From Editor’s Room</a> .....	22

## Message from President

Yoshihiko Akaiwa  
President, Communications Society



I am pleased to serve as president of the Communications Society of the IEICE this year. Thirty-five years has passed since I became a member of the IEICE. I wish to contribute to Communications Society to thank IEICE for many benefits I received so far.

When I entered IEICE, analog communications are major ones and digital communications are just on starting point. At that time the AT&T Bell Laboratories showed overwhelming power in the field of communications research and development(R&D). I used to enjoy reading their papers in the blue covered Bell System Technical Journal, which are high in quality, rich of content and clear in writing. I regret that we cannot find such a journal now.

“Digital” is a key word for the progress of communications technology starting from digital modem for public switched telephone line to ISDN, digital microwaves, fiber optic communications, internet, cellular systems, broadband systems and IP phones. Along with this progress, major topics of research in academy and industry, and major players in communications business changed. I believe that Japanese contributions to the progress in communications technology is not insignificant compared with other developed countries. The IEICE played an important role in this viewpoint.

However, publicity of IEICE toward foreign countries has not been sufficient. Recently we are encouraged by the fact that, in the IEICE

Transaction on Communications (the English journal of our society), the number of papers increased and a half of them are from foreign countries, especially from Asian countries. This means these countries have increasing power in R&D activities in communications. As president of IEICE Communications Society, I welcome this situation and pleased to collaborate with them more closely than before.

These years, we are worrying about the decrease of the number of member and the foreseen financial problem of IEICE. Our society started a task force to deal with this problem while maintaining the grade of service toward members. How to encourage many student members to continue as a regular member and how to cut the cost are key issues. Electronic publication may be a solution to cost reduction, and our efforts are important to make our society beneficial for members, especially for young members, who will support the future R&D in communications. I think the IEICE Communication Society is the best place in Japan to help young communications researcher and engineers to develop their creativity by presenting and touching latest R&D results.

## ごあいさつ

赤岩 芳彦  
通信ソサイエティ会長



今年度のソサイエティ会長を勤めさせていただくことになりました。どうぞよろしく申し上げます。

私が電子情報通信学会に入会して、35年経っています。会員として、今までにお世話になった分に対して、いくらかでもお返しのできる貢献ができればと思います。私が入会した当時、通信は専らアナログ通信が主流であり、有線 PCM 方式が研究の緒についたばかりでした。そのころの研究では、米国のベル研の人々が圧倒的な力を見せていたものです。彼らが発行する論文誌、Bell System Technical Journal は、その論文の質の高さ、文章の分かり易さで、IEEE の雑誌に比べても群を抜いており、我々は水色の表紙のそれが到着するなりむさぼり読んだものです。残念ながら、現在、このような雑誌は見当たらないようです。

通信のデジタル化は、電話回線モデム、ISDN、デジタルマイクロ無線、光ケーブル、インターネット、自動車・携帯電話、ブロードバンド、IP 電話へと続いて来ました。これに合わせて、学会での研究分野も、産業界で脚光を浴びる企業も変わってきたかと思えます。これまでの通信技術の進展に対する日本（人）の貢献は、欧米に比べて決して遜色が無かったと言えるでしょう。我々の学会も、先導的な役割を果たして来ました。ただし、通信に関する研究成果の世界に向けての発信の場として、我々の学会が十分な結果を出したとは思われません。最近になって、当ソサイエティが発行する英論文誌の掲載論文数が大きく伸びるとともに、海外（特にアジア）からの投稿論文の割合が半数に達した事は、まことに喜ばしい限りであります。韓国、中国、台湾などのアジア諸国が、通信分野でも急速に力をつけていることの現れであろうかと思えます。通信ソサイエティとしても、これら

の国々との交流をさらに深めて行きたいと思えます。

さて、バブル崩壊後の経済産業の停滞の影響であるか分かりませんが、会員、特に正会員の数が減少し、財政的にも問題が見られています。通信ソサイエティではこの問題に対処するとともに、会員へのサービスを維持するために、ソサイエティ会計の独立採算化へ向けた検討を開始しています。会員増強とコスト圧縮が課題でしょう。これらに対しては、学生会員の会員への移行と電子化が鍵を握るものと思われれます。加えて、これからの通信技術を支える技術者、研究者、特に、若い方がたにたいして、当ソサイエティが魅力あるものにしたいと思います。学会において、最新の研究開発情報にふれ、研究開発の成果を発表し、立場、年齢を越えて議論を行うのは、技術者・研究者として重要となっている、自分で考える力、まとめる力を涵養するための最高の訓練になると確信しています。そのため、我々、役員が少しでもお役に立てればと思えます。

# 2003 Society Conference: Communications Society Special Event

## How can information and communication technologies contribute toward realization of safety and comfortable community?

Naoki Kato

NTT Energy and Environment Systems Laboratories

Kuniharu Himeno

Fujikura Optics and Electronics Laboratories

### 1. Overview

At the General Conference of the IEICE held at Niigata University from September 23 to 26, 2003, a Communications Society Special Event was conducted jointly by the CQ (Communication Quality), EE (Energy Engineering in Electronics and Communications), and OCS (Optical Communication Systems) Technical Committees.

Because the General Conference was being held in an outlying region, the Committees planned a special event that would take advantage of ties with the community and the unique characteristics of that region. The theme of the discussions was: “How can telecommunication



Fig. 1. Prof. Kenichi Mase, who acted as organizer.

technologies, which have continued to develop rapidly in recent years, as well as related application technologies, contribute to the realization of a safe and comfortable community?”

Professor Kenichi Mase of Niigata University acted as organizer for the event, which was comprised of two sections, with four presentations in the first half and a panel discussion in the second half. Dr. Seiichi Muroyama of NTT

Facilities, Chair of the EE Technical Committee, was the moderator for the panel discussion.

### 2. Presentation

After an opening speech by Prof. Mase, the following four presentations were given.

1. Conservation of Energy and Resources in Communications; Prof. Hiroyuki Kasai (Tokyo University of Technology)
2. Environment Load Evaluation and Eco-design in IT Solutions; Principal Researcher Shigeyuki Miyamoto (NEC)
3. Information Security Technologies, and Security Awareness, to Combat Cyber Terror; Prof. Masakatsu Morii (University of Tokushima)
4. Waste Material Information Management Systems using IT – A Proposal for a Business Model in a Recycling-oriented Society; Prof. Kenichi Mase (Niigata University)

Prof. Kasai pointed out that the life cycle energy required for telecommunications has dropped by 34% for

digital telephone networks in comparison to analog

networks, but has increased by a factor of 5.4x and 12.1x for ADSL and FTTH, respectively

in comparison to digital telephone networks. These figures indicate that in the future, it will be important to

promote reductions in energy consumption in telecommunication devices, study network configurations that offer high- energy usage efficiency, and promote telecommunications applications with consideration to energy consumption.

Mr. Miyamoto introduced a method developed by NEC for conducting quantitative evaluations of the

positive and negative effects of IT solutions on the environment. This method makes it possible to compare environmental load before and after the implementation of an IT solution by inputting seven items representing environmental load factors: equipment power consumption, paper usage, human transport, materials transport, network service usage, stock for disposal, and stock for storage.

Prof. Morii pointed out the importance of analyzing existing networks from a variety of perspectives – “What types of damage are these networks susceptible to?” “How can we recover from this damage?” “How can we prevent this damage from reoccurring?” and “What is the nature of this damage?” He also pointed out that in order to conduct these analyses, and to prevent



Fig. 2. Prof. Hiroyuki Kasai



Fig. 3. Principal Researcher Shigeyuki Miyamoto



such damage, it is important to ensure a clear awareness of security issues and to construct management and operation systems and risk management systems.

Prof. Mase introduced a “Wireless Ad Hoc Network” that is being developed as part of a venture tie-up for use in systems that can measure the volumes of waste being generated by construction sites, offices, and homes, and evaluate the waste reduction effects (Fig. 5). He also presented a demonstration at the conference venue.

### 3. Panel discussion

The panel discussion welcomed participation by audience members. After one segment of the discussion theme was introduced, a number of objections and questions were raised. Following are some examples of these comments:

“In regional societies in the past, communities operated smoothly in part because most of the people in that community were doing the same kind of work. Now, it’s difficult to form a community, partly because each person is doing different work separately. In a regional community, residents have to feel that they are ‘connected’ in some way. How can we create this feeling of connectivity using networks?”  
 “The current network society has been referred to as ‘free’ and ‘anonymous,’ but how can we deal with needless ‘junk mail’ and ‘network pranks’? How can we protect people’s privacy?”

Following are some of the opinions voiced in response to these questions.  
 “Information technologies can be used very effectively when holding events that involve the entire community. It is particularly important for people who have recently become a part of a regional community to make an effort to revitalize that community. This ties into an awareness of network features such as fixed rates and unlimited access, but this can also bring about negative effects such as increases in the volume of unnecessary information. Users must maintain an awareness that when one uses a network, there is a corresponding monetary cost. In the process through which a network society matures, there is an initial period during which we must close our eyes. In a network society, it is more important to create rules than it is to establish controls, and at a certain point, new rules also become necessary. In order to protect people’s privacy, there must be an awareness of the network aspects as well.”

During the debates, there were numerous questions that were difficult to answer, but all of the participants expressed their opinions frankly, and the discussions continued throughout in a relaxed and amiable atmosphere.

### 4. Conclusion

Based on the presentations and debates at these events, it was clear that Information Technologies offer many applications that can contribute to improving the quality of life and to revitalizing the community. There is still room for improvement, however, for example from the perspective of the energy efficiency and security of networks, and there are many elements that must yet be targeted for development.

For this reason, even as we continue our efforts to resolve the problems faced in existing network systems,

we must also focus on the issue of using networks

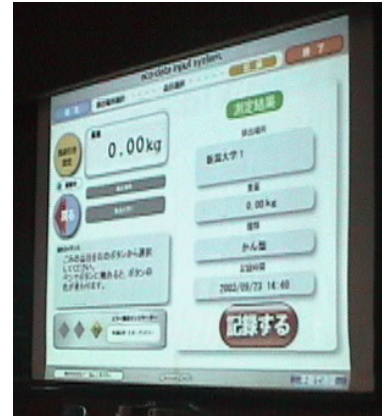


Fig. 5. PC display for waste reduction effect evaluation system.



Fig. 6. Panel discussion participants, the first man from the right: Dr. Seiichi Muroyama, who acted as moderator.

effectively to improve the quality of life, and to achieve safer, more comfortable communities.

# “Terrestrial Digital Broadcasting Service is Now Available” ---- A Report on the Panel Discussion

Youichi Fukada\*, Iwao Sasase<sup>†</sup>, Yoichi Maeda\*, Hiroshi Tomonaga<sup>‡</sup>,  
Miki Hirano\*, and Hiroshi Yamane\*  
\*NTT, <sup>†</sup>Keio University, <sup>‡</sup>Fujitsu Labs



## 1. Introduction

The digital terrestrial broadcasting service started on 1<sup>st</sup> December 2003 in parts of the three biggest cities in Japan----Tokyo, Osaka and Nagoya. In commemoration of the progress, The IEICE Communications Society produced the panel discussion on “Terrestrial Digital Broadcasting Service is Now Available” in 2004 IEICE General Conference at Tokyo Institute of Technology on 22<sup>nd</sup> March as the society special session.

## 2. Session Program ---- Lectures and Panel Discussion

Lectures were given by four specialists who are playing active parts in the broadcasting field, and thereafter, the panel discussion was held by all of them. The lectures and panel discussion included many fundamental tutorials and hot topics on various subjects; i.e. technology, service, contents making, institution, etc. (Figure 1, 2)

The lecturer and the title of each lecture were as follows.

- Mr. Kazuhito Matsumoto (MPHPT), “Technical Trend of the Digital Terrestrial Broadcasting Service”
- Mr. Mabitto Yoshida (MPHPT), “For Spreading the Digital Terrestrial Broadcasting Service”
- Mr. Ikuo Wada (NHK), “Ubiquitous Society Realized by the Digital Terrestrial Broadcasting”
- Pres. Shozo Fukui (Tomo-Digi Corp.), “Digital Content Making for the Interactive TV”  
(Chairperson; Youichi Fukada (NTT))

## 3. Overview

Some instances of the topics discussed in the session were as follows.

- The digital terrestrial broadcasting system has many merits; high-quality picture and sound, data broadcasting being connected with TV programs, ubiquitous TV viewing with mobile equipments, etc.
- Because of the complicated geography problem, the start of the Japanese digital terrestrial broadcasting service was later than the West. However, the later-starting brought high performance to the Japanese system.
- Some programs for the interactive TV service have been provided. They are attractive although

producing them requires a great deal of time (A few samples were televised on the screen.).

- Most people in the broadcasting industry consider that it takes some time to achieve the collaboration between the communication and broadcasting; technical conditions have already arranged (MPEG, video server, WDM for broadband transmission, etc.), and now institutions and business matters should be prepare for the future (copyright, business model, etc.).
- Etc.

## 4. Acknowledgement

This program was planned and supported by The Technical Groups on Communication Systems (CS), Network Systems (NS), and Electromagnetic Compatibility (EMCJ) affiliated to The IEICE Communications Society. This program was completed thanks to the united efforts of our cooperators and the panelists. We would like to appreciate them.



Fig. 1 Lecture presented by Pres. Fukui



Fig. 2 Panel discussion

## Internet Architecture (IA) Technical Committee

Chair: Hiroshi Esaki (The University of Tokyo)

Vice Chair: Kenichi Nagami (Intec Netcore),  
Jun Ogawa (Fujitsu Laboratories)

Secretaries: Yutaka Nakamura (NAIST),  
Satoshi Katsuno (KDDI R&D Labs)



### 1. Introduction

The character of the Internet is going to change from simple experimental networks for technical experts into a widely accessed medium that influences many people's lives across a wide range of fields. Conventional approaches taken by academic societies tend to narrow the scope of research on the Internet into specific fields, and they fail to grasp the Internet as it actually is. For this reason, many activities and technical developments have occurred outside academic societies.

Many distinguished people involved with Internet technology feel alienated from academic societies and are resigned to low estimation of their work. This process leads to academic societies becoming isolated from the business world.

The Internet Architecture (IA) Technical Committee was established to improve such situation, and to become involved in various technical developments and their influence on social activities. The objective of this committee is to establish a process of involvement in Internet activities and technical developments.

The duty of the committee is to utilize the free spirit of the Internet, and it is not limited to the conventional activities of technical committees. Such activities will contribute to the formation of a new attitude among academic societies for the new decade.

### 2. Area of interest

The following technical fields are covered by the Internet Architecture Technical Committee:

- General research and applications on the Internet (The research includes not only simple technical developments, but also discussions of its influence, survey and research activities).
- Verification experiments, operation technology, measurement technology, evaluation of interoperability and implementation concerning the Internet.
- Security, network management, QoS and performance measurement.
- Information services, database, web and mobile.
- IPv6.
- Internet technologies for disabled people.

- Educations and medications on the Internet, regional, local-governmental activities, and case studies.
- Business applications on the Internet.

### 3. Activities

#### 3.1 Technical Meetings

The Internet Architecture Technical Committee usually holds four technical meetings each fiscal year. The meetings are jointly held with the following technical committees: The Technologies and Applications of the Internet (TAI) Technical Committee, and the Quality Aware Internet (QAI) Technical Committee of Information Processing Society of Japan (IPSJ). These meetings are co-held to gather many people in internet-related areas and to encourage exchanges with researchers.

The next meeting will be co-held with JSPS (Japan Society for the Promotion of Science) 163rd Committee on Internet Technology (ITRC). In this meeting, a special session on Japan Gigabit Network (JGN) II has been organized. JGN II, the successor to JGN, is a nationwide Internet test bed for research and development purposes, which is established and operated by NICT (National Institute of Information and communications Technology). In the special session, we have invited Mr. Junichi Shimada from NICT as the keynote speaker for introducing JGN II. We have also invited Prof. Yuji Oie as the convener of the panel session. Eight panelists have been invited to attend the panel session to discuss the promotion of research and development using JGN II.

#### 3.2 Special Issues and Sections on Internet Technology

The Internet Architecture Technical Committee organizes IEICE Transaction special issues and sections on Internet Technology. The purpose of these special issues and sections is to exchange recent information and to promote research and development on internet technology for further improvement of current internet information and for development of future advanced IP technology. Since 2001, four special issues and sections have been published and 20-30 papers were printed in each special section. The

Table 1. Internet Architecture Technical Committee Meeting Schedule 2004-2005

Date	Place	Themes	Co-organizer
May 26	Seiryozan Club (Bandai-Atami)	JGN II, Internet, etc.	ITRC, QAI, TAI
Jul. 12	The University of Tokyo	Internet, etc.	QAI, TAI
Oct. 28-29	AIST (Tsukuba)	Internet, etc.	QAI, TAI
Jan. 2005	Sapporo	Internet, etc.	QAI, TAI

5-th special section on Internet Technology will be published in April 2005.

### 3.3 Co-hosting of Gigabit Network Symposium

The Gigabit Network Symposium (as known as JGN Symposium) has been held every year since 1999. The Symposium is hosted by TAO (Telecommunications Advancement Organization of Japan) and the Internet Architecture Technical Committee co-hosts the symposium with other technical committees. The symposium invites distinguished people who play important roles in the field of IT in Japan and abroad. In addition, it provides various programs such as special lectures, panel discussions and fine demonstration exhibitions.

The last Internet Architecture Technical Committee meeting was held January 2004 at Tokyo Fashion Town Building, as a joint workshop with JGN Symposium 2004. In the technical meeting, 11 papers were presented, and 70 people attended the meeting (In Fig. 1).

The presented papers centered on Internet-related topics, such as, wireless LAN, routing, multicast, and so on. However, they are not limited to network layer technologies, and they include a wide variety of themes. For example, the topics presented there were as follows: quality control of multimedia data streaming, media synchronization mechanisms, transmission of motion picture stream over IP networks, and experiments of distance education systems.

#### Call for Presentation and Participation

Paper submission and participation in the technical meetings are encouraged. All the events and related information are provided in Table 1.

#### Reference

- (1) Internet Architecture Technical Committee Web page, <http://www.ieice.org/cs/ia/jpn/>



Fig. 1 Appearance of the last technical meeting



# The 17<sup>th</sup> symposium on Optical Communication Systems “Photonic Network Innovation anticipated in the future Japan”

Joji Maeda<sup>†</sup> and Eisuke Sasaoka<sup>‡</sup>

<sup>†</sup>Faculty of Science and Technology, Tokyo University of Science

<sup>‡</sup>Sumitomo Electric Industries, Ltd.



## 1. Overview

In December, Japanese have a custom of having parties called ‘Bonen-kai,’ which originally mean parties for forgetting tough things in that year. Recent Bonen-kai’s have lost their original sense, regarded by many as friendly meetings. It seems natural that some members recognize the annual Hakone symposium of the optical communication system (OCS) technical group as one of Bonen-kai’s. In 2003, however, the 17<sup>th</sup> symposium held on December 11<sup>th</sup> (Thursday) and on 12<sup>th</sup> (Friday) at Yumoto Fujiya Hotel in Hakone was something much more substantial, providing important messages for photonic industries.

The symposium consisted of a special invited speech, four invited talks, two workshops and a rump session. The number of total attendees is 182.



Fig.1: M. Shikada, chair of OCS technical group giving opening remark.

## 2. Invited talk 1: Novel development of optical transmitter and receiver technologies

After the opening remark by Dr. Minoru Shikada of NEC, chair of OCS technical group, Dr. Takashi Mizuochoi of Mitsubishi Electric gave a talk on recent innovation of optical transmitters and receivers, aiming at presenting current status of technologies close to real applications. The talk has three topics: electrical dispersion equalizers, coherent modulation/ demodulation of return-to-zero pulses, and forward error correction of the third generation. Total improvement will be summed up to 10dB, leading to significant cost down thanks to increase in capacity and/ or in repeater spacing.

However, his honesty did not allow him to call such technologies as novel, since all of them have already discussed in the field of radio communication by 1960s. The revival of the technologies is supported by the development of device technologies that afford high speed processing. We are deeply impressed by his last remark that the engineers of optical communication systems must learn more from radio technologies of some generations ago.



Fig.2: Two invited speakers on the first day: left, T. Mizuochoi (Mitsubishi Electric), right, K. Tajima (NTT).

## 3. Invited talk 2: Photonic crystal fibers

Photonic crystal has been a continual theme of invited talks of this symposium for several years. Dr. Katsusuke Tajima of NTT talked on recent development of photonic crystal fibers including their tutorials: structure, wave-guiding mechanism, and difference between hole-assisted fibers and photonic bandgap fibers.

Remarkable features of photonic crystal fibers lie in large degree of freedom in designing dispersion and nonlinearity, and in extremely small bending loss. Transmission loss of currently available photonic crystal fibers is around 0.28dB/km at 1.55 $\mu$ m, mainly due to imperfection loss. However, intrinsic loss of the photonic crystal fibers is smaller than that of single mode fibers, since they require nothing other than raw glass material. Improvement of manufacturing technologies, together with development of optical coupling technologies, will reduce the loss of photonic crystal fibers, making them attractive as transmission media.

## 4. Workshop 1: What does the future Japan anticipates in photonic networks?

As users of optical networks, four panelists gave individual talks as in the following:

1. Dr. Hiroyuki Nakamura (KDDI), “Merge of communication and broadcasting-from a laboratory of ITS development.”
2. Mr. Nozomu Saruhashi (NOVA), “‘Ochanoma-Ryugaku’ (direct translation: study abroad in living room, on-line interactive programs of foreign language education supported by a TV apparatus and a special set-top-box) and broadband networks.”



Fig. 3: Panel discussion in Workshop 1. Top, left: S. Deguchi (NTT), center: A. Satori (SECOM). Bottom left: N. Saruhashi (NOVA), center: H. Nakamura (KDDI). Right: Y. Nishimura (Osaka Univ.).

3. Mr. Akira Satori (SECOM), “Change of social circumstances and security systems.”
4. Dr. Shuichi Deguchi (NTT), “Future of business on contents distribution over optical fiber networks.”

The chair of this workshop was Prof. Yoshio Nishimura of Osaka University. In the panel discussion, they raised a question on IP based systems that have been furiously prevailing. They claimed that, from the view point of driving safety, or instantaneity and reliability required in home security and in bi-directional video streaming, they could not find enough reliability in IP based networks originally designed for best-effort type transmission.

Finally, they concluded that we must provide total solutions for what users really want. To realize them, and to prevail optical networks, further improvement of human-machine interfaces will be indispensable. Researchers must change their mind from R&D based on their own recognition to R&D based on the requirement of users.

### 5. Rump session: What is needed to reactivate optical communication business in Japan?

In the long-term recession of photonic systems, Japanese photonic industries are struggling for renovation of the market. But how in reality is in the world? Rump session after reception banquet began with a toast in beer by Dr. Yoshiaki Yamabayashi, the chair of this session. Three experts were called for giving primer talks. Dr. Osamu Mizuhara of TriQuent Optoelectronics talked about ‘current status of photonic system industries in north America and Japan,’ revealing dreadful condition of the American industries. Dr. Haruo Okamura of Corning talked about ‘Japanese business of photonic systems in view of international standardization,’ claiming that Japanese, historically respecting social cooperation, lack in strategies on the standardization. Dr. Terumi Chikama of Fujitsu Lab talked about ‘Current status and future of Japanese business of photonic systems,’ closing his talk with ‘Let’s work cheerfully!’ In a relaxed atmosphere, discussions concluded that Japan can lead other nations



Fig. 4: Left: three panelists of rump session relaxed before speech. O. Mizuhara (TriQuent), H. Okamura (Corning), T. Chikama (Fujitsu). Right: Y. Yamabayashi (NEL), chair of rump session holding a cup of beer for toast.

by the spread of FTTH, stimulating its photonic industries.

### 6. Invited talk 3: Current status and future of quantum cryptography

The word ‘quantum’ seems to remind most researchers nightmares in their universities. This is partly because topics related with the quantum mechanics are often told mystically. Mysteries do not compromise with realities where engineers live in. However, quantum cryptography has been experimentally demonstrated; it is no more a mystery. The talk given by Dr. Kazuo Nakamura of NEC has revealed the mechanism of quantum cryptography, clearing myths around this technology.

There are two keys to understand the technique. One is inseparability of a photon. If the data is transmitted in extremely low power, i.e., single photon regime, the data was carried by a single photon. The receiver detects at most one photon per bit. Even if an eavesdropper taps the photon, it never reaches to the receiver, counted as a mere loss. The other key is states entanglement: superposition of two (or more) distinct quantum states. This prohibits eavesdroppers to copy the photon state. To realize the entanglement, his group uses superposition of polarization states.

In semi-classical sense, the system employs polarization modulation with extremely low transmission power. What is intrinsically quantum lies only in use of inseparability of a single photon; polarization is a classical phenomenon. The system is quite realistic, though lacks in fantasies that everyone



Fig.5: Two invited speakers on the second day: left, K. Nakamura (NEC), right, Y. Sakakibara (AIST).

felt at the first encounter with quantum mechanics. This nature is essential in engineering, it seems.

#### 7. Invited talk 4: Carbon nano-tubes change optical communication and optical devices

Probably, the carbon nano-tube must be one of the best materials that have triggered interests of researchers of material science. Dr. Yoichi Sakakibara of AIST talked on the material with regard to its optical properties.

In optical application, tiny carbon nano-tubes are spread over a substrate with aid of some dissolvent. The devices exhibit good saturable absorption, and have been used in passive mode locking of fiber lasers. The device can be used as a noise suppressor in photonic systems, provided the shift of the wavelength band and the decrease of the saturation threshold are both realized. Because of its robustness to optical damages the device is quite promising. Shrink of tube diameter, control of tube length, improvement of purity, and mass-production techniques should be developed.

#### 8. Special invited speech: Strategy and organization in networking society



Fig.6: J. Kokuryo (Keio Univ.) giving an interesting talks with full of humors.

Prof. Jiro Kokuryo of Keio University gave a special talk, mapping the position of optical networks in social systems.

In the first stage of the information society, investments concentrated in constructing communication infrastructures. From a conventional point of view, network infrastructure has become excessive for real traffic, though it is not so from an application point of view. The important thing is how to make a

profit from what have been invested.

He proposed three strategies to activate information technologies:

1. Creation of super value-added industries: Japanese have extreme interest and criticism in new products. If they are connected to makers abroad, Japan can be a hub of product development and test marketing.
2. Co-existence of economical development and environment: drastic improvement of efficiency in resource usage will be possible by using information technologies: for example, electronic tags attached to parts of products will make history of the parts traceable when the parts are recycled. This feature will create active markets of second-hand parts.
3. Realization of barrier-free society: use of network will make elderly, handicapped or

people possible to participate in economical activities.

He also mentioned anticipated features of business or society employing information technologies that the openness of the society and connectivity between social modules will be indispensable.

#### 9. Workshop 2: For various possibilities of optical communication technologies

Versatility of photonic systems recently enables the photonic technologies to be applied to various fields. This workshop was planned to review the range of currently applied field of optical communication technologies, suggesting their direction in the future. The chair was Dr. K. Hagimoto of NTT, the former chair of OCS.

Four panelists and the titles of their talks are in the following:

1. Prof. Masao Nakagawa (Keio University), “Visible light communication technologies, from ubiquitous to ultra-high speed.”
2. Dr. Kazuhiko Kurata (NEC), “Current status and future of optical interconnection.”
3. Dr. Satoshi Suuki (Canon) “Application to wireless optical transmission.”
4. Dr. Yasunori Kimura (Fujitsu Lab), “Anticipation in high speed networks from a computer hardware engineer

The talks and the following discussion confirmed that we have already accumulated much of photonic technologies. The problem is how to organize individual technologies and application demands. To enhance versatility, severe cost down of optical devices (eye-safe lasers, 10Gbit Ethernet equipments, optical amplifiers, etc.) is absolutely necessary. Collaboration between laboratories across several companies will be beneficial for large scaled experiments. They claimed necessity of finding good sponsors such as key customers, not to mention backups by the government.

The session was closed with an encouraging remark by the chair, “Go ahead somehow, and find good results. That will bring about breakthroughs!”



Fig. 7: Panel discussion in Workshop 2. Top, left: S. Suzuki (Canon), center: Y. Kimura (Fujitsu). Bottom, left: K. Kurata (NEC), center: M. Nakagawa (Keio Univ.). Right: K. Hagimoto (NTT).

# Communications on The Islands

## Report on 5th Asia-Pacific Symposium on Information and Telecommunication Technologies (APSITT 2003)

Masayuki TAKAHASHI<sup>†</sup>, Secretary, Hirohiko SATO<sup>††</sup>, Organizing Committee Vice Chair  
<sup>†</sup>NTT, <sup>††</sup>NTT Software Corp.

This is to report that Information Networks Technical Group and Network Systems Technical Group successfully organized 5th Asia-Pacific Symposium on Information and Telecommunication Technologies (APSITT), held at University of New Caledonia on Nov. 25-26, 2003, sponsored by IEICE Communications Society.



Conference Site – University of New Caledonia

### 1. Concept and Brief History of APSITT

APSITT has been established to aim toward the prosperity of Asia-Pacific region by presenting the opportunities of academic forum for mutual understanding and friendship among researchers and leaders in the information and telecommunication field. 5th APSITT was held following the past four conferences shown below.

- 1st: Nov. 1993, Bangkok, Thailand
- 2nd: Mar. 1997, Hanoi, Viet Nam
- 3rd: Aug. 1999, Ulaanbaatar, Mongolia
- 4th: Nov. 2001, Atami, Japan / Kathmandu, Nepal (held by video conference)

### 2. Overview

We had most numbers of contributed papers and participants since 1st conference was held. The key facts and statistics on APSITT 2003 are following.

Sponsor:

IEICE Communications Society

Technical Co-Sponsor:

IEEE Communications Society

Organizers:

Information Networks Technical Group

Network Systems Technical Group  
 University of New Caledonia

Conference Date:

Nov. 25-26, 2003

Conference Venue:

Nouvelle campus, University of New Caledonia  
 Noumea, New Caledonia

Participants:

130 from 7 countries/regions (by nationality)

Contributed Papers:

Submitted: 120

Accepted: 101

Published: 90

Presented: 86



Dr. Taladoire presents the keynote Speech

### 3. Sessions

#### 3.1 Opening Session

We had three speeches on the Opening Session following the Opening Address by Dr. Yuji INOUE, NTT, International Advisory Board of the conference.

- Welcome Address:

Mr. Philippe Martin, University of New Caledonia

- Keynote Speech 1:

“Telecommunications in New Caledonia”

Mr. Bruno Manot, OPT

Mr. Olivier Verdier, OPT

- Keynote Speech 2:

“Computer Science Research in New Caledonia”

Dr. Gilles Taladoire, Computer Science Research in New Caledonia

Mr. Martin, Secretary General of the university, expressed welcome message to all the participants on

behalf of the conference host.

The general status of the telecommunications in New Caledonia was explained by the executives of OPT (Office of Post and Telecommunications). We got to know that there are nearly 100,000 mobile phones and 17,000 Internet users in this region with 200,000 habitants.

Dr. Taladoire, who is also the conference organizing committee chair, introduced the international joint research project between University of New Caledonia and IRD (Institute of Research for Development), working on researches on global environment.

### 3.2 Technical Sessions

86 papers were presented in 24 sessions covering various areas on information and telecommunication.

Below is the list of the technical sessions and the numbers of presentations in each session.

- Mobile Communications (15)
- Multimedia/Broadband Applications and Services (8)
- Information Systems (7)
- Content Delivery (4)
- Multicast (4)
- Ad Hoc Network (4)
- Network Architecture (4)
- Home Network and VPN (4)
- MPLS and Optical Network (4)
- High Speed Network (4)
- Traffic and QoS (4)
- Ubiquitous and P2P Applications (4)
- Database and Metadata (4)
- Routing (4)
- Mobile IP/IPv6 (4)
- Coding and Protocols (3)
- Computing System (3)
- Security (2)

### 4. Activities with Local Entities

Since this was the first international conference on technologies held in New Caledonia, journalists from TV, radio and newspaper visited us and had the interviews.

Particularly each of the congress and the government of New Caledonia were so kind to invite the participants to the cocktail parties. We felt ourselves were the welcome guests.

At the conference banquet, we received the calls by local celebrities, Mr. Andre Nakagawa, the honorary consul general of Japan in New Caledonia, Mr. Kazuo Nakamura, the president of the Japanese Association in New Caledonia, and Ms. Marie-Josée Michel, missus of the president of the Amicale Japonaise.



### 5. Information

You can see further information on APSITT including the presentation slides of keynote speeches at following URL.

APSITT 2003:

<http://www.ieice.org/cs/in/APSITT2003/>

Information Networks Technical Group:

<http://www.ieice.org/cs/in/>

See you on next APSITT!

# Managing Pervasive Computing and Ubiquitous Communications: A Note from APNOMS 2003

Kenichi Mase\* and Nobuo Fujii\*\*

\*: Niigata University, \*\*: NTT Laboratories

The 7th Asia-Pacific Network Operations and Management Symposium(APNOMS2003) was held during October 1-3, 2003 in Fukuoka, Japan. APNOMS2003 has continued to play an important role in exchanging and discussing all aspects of telecommunications management among academic and telecommunication industry at large in the Asia-Pacific region. A report on APNOMS 2003 is provided in “the Journal of Network and Systems Management Volume 11, Number 4 PP.505-509, December 2003 Klumer Academic/ Plenum Publishers,” The past activities in APNOMS can be also found through <http://www.apnoms.org/>. APNOMS2003 was organized by IEICE TM and KICS KNOM (The Korean Institute of Communication Science, Korea Network Operations and Management Committee). Supporting organizations were IEEE CNOM, IEEE, APB, IEEE ComSoc Japan Chapter and TMF(TeleManagement Forum). Authors of this report played a General Chair and a TPC Chair roles. The preparation for the symposium started in December 2002.

Under the symposium title “Managing Pervasive Computing and Ubiquitous Communications”, about 250 people from ten countries attended the symposium. Pictures attached to this report indicate how the symposium attracted participants. The first picture shows a conference room where key note speeches and regular technical sessions took place. The second picture shows a poster session. Two poster sessions were scheduled for two days. Ten presenters reported their study results in each day. The third picture shows a social event took place in Umino-Nakamichi. The last picture shows “Distinguished Expert Panel” discussions.

APNOMS 2003 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 industry in technical contributions and in the organizing and program committees; the tradition of special sessions focusing on experiences and lessons learned by different The 7th Asia-Pacific Network Operations and Management Symposium(APNOMS2003) was held during October 1-3, 2003 in Fukuoka, Japan. APNOMS2003 has

countries in this region; and the overall collaborative, interactive and friendly atmosphere of the symposium.



APNOMS2004 is not planned since NOMS2004 is held in April in Seoul, Korea. As the next APNOMS, APNOMS2005 will be held on September 28-30, 2005 in Okinawa, Japan. A committee for APNOMS2005 will be organized in October/November 2004. The information for APNOMS2005 will be soon available through <http://www.apnoms.org/2005>. ■



# Photonic Internet Lab.: New challenges for archiving GMPLS de facto standard

Naoaki Yamanaka and Akira Misawa  
Photonic Internet Labs.



## Summary

Photonic Internet Lab. (PIL) is delineating the world-class photonic-GMPLS (Generalized Multi-protocol Label Switching) which utilizes wide-band, cost-effective photonic technology to implement IP-centric managed networks. PIL is a new consortium for researching the GMPLS protocol and achieving a de facto standard in this area. It is supported by the Ministry of Public Management, Home Affairs, Posts and Telecommunications. Its members are creating leading edge GMPLS code modules and testing them at the shared lab site. The experimental results, new ideas, and protocols are being contributed to standardization bodies such as IETF and OIF. This article describes the results of the world's first MPLS/GMPLS multi-region (multi-layer), multi-route, multi-vendor inter operability test.

## 1. PIL organization

PIL was founded in September 2002 to promote research on and the development of the next-generation photonic network and to encourage global standardization activities. PIL currently consists of seven companies: Nippon Telegraph and Telephone Corp. (NTT), NEC Corporation, Fujitsu Laboratories Ltd., The Furukawa Electric Co., Ltd., Mitsubishi Electric Corporation, Oki Electric Industry Co., Ltd., and Hitachi, Ltd. PIL activities are supported by research and development aimed at establishing international technical standards as part of the Strategic Information and Communications R&D Promotion Scheme of the MPHPT (Ministry of Public Management, Home Affairs, Posts and Telecommunications), which is funding selected IT activities.

There are two Working Groups (WGs). Technical test WG assesses leading-edge protocol code modules developed by member companies. The standardization strategy WG is responsible for technical discussions on standardization proposals. It has discussed and submitted 22 standardization proposals to IETF and OIF as of June 2003. All the contributions

The framework of the standardization strategy WG is shown in Fig. 1. As shown, each member company researches and develops new ideas, protocols, and running code modules. The topics tackled by PIL are organized by the steering committee. Each proposal is discussed and tested by PIL.

PIL member strategies and topics are shown in Fig. 2. Each member has a different direction or strategies for standardization. PIL promotes the core part of the protocol and extensions. In addition, the next step in standards submission and leading edge code developments are key activities of PIL. Technical items are listed in Fig. 2. PIL has already tested the signaling and routing parts of GMPLS. We intend to cover the multi-layer (region) traffic control framework, reliability, and control network issues from now.

## 2. MPLS-GMPLS, multi-layer, multi-route interworking tests

PIL members, NTT, NEC Corporation, Fujitsu Laboratories Ltd., The Furukawa Electric Co., Ltd., and Mitsubishi Electric Corporation successfully concluded the world's first MPLS-GMPLS interoperability tests using multi-layer, multi-route GMPLS signaling/routing protocols at MPLS2003, Washington D.C. in Oct. 26-28, 2003. A photography of this test is shown in Fig. 3. MPLS2003 <www.mpls2003.com> had more than 600 attendees from major service providers, carriers, and vendors. In addition, IETF key persons are joined in the discussion held at our booth.

Starting with the MPLS2003 demonstration, Hitachi Limited joined the team in interworking the MPLS network with the GMPLS networks demonstrated in Tokyo Fashion Town in Jan. 26-27, 2004 at the Gigabit Network Symposium 2004 in Tokyo, Japan. The trial network setup is shown in Fig. 4 and Fig. 5. It represents a large-scale backbone network connecting metro networks. Metro networks 1 and 2 use MPLS technology and are

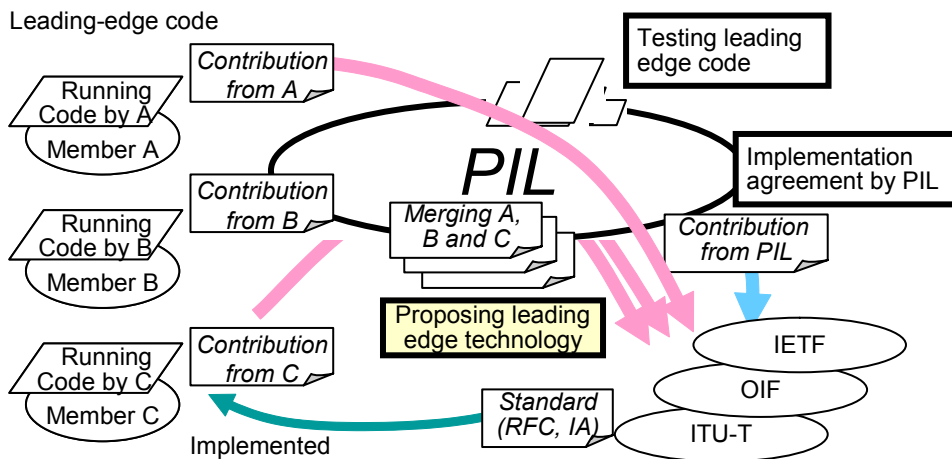


Fig. 1 PIL's Standardization approach

are posted on PIL's WWW site <www.pilab.org>.

constructed around MPLS routers produced by Fujitsu Ltd. and



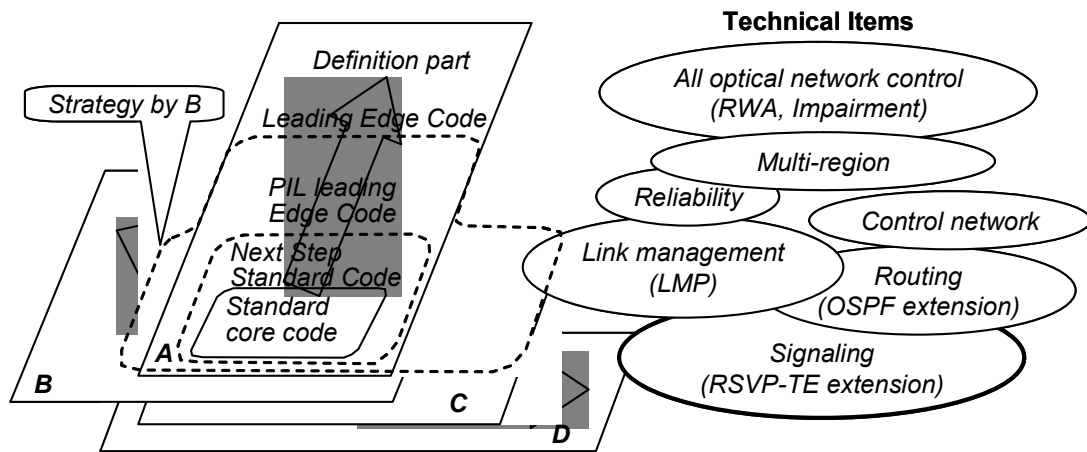


Fig. 2 Leading edge code for next generation photonic network

Furukawa (GeoStream R920 and FITElnet-G21, respectively).

The backbone network use the GMPLS technology as implemented in four kinds of equipment; HIKARI routers by NTT (IP and wavelength), GMPLS routers of FITElnet-G80 by Furukawa (IP and TDM), TDM crossconnects of SpectralWave U-Node by NEC (TDM and wavelength), optical crossconnects by Mitsubishi Electric, Hitachi, Fujitsu Laboratories, and NTT (wavelength and optical fiber). The bracketed expressions indicate the function and the layer handled by each company's equipment. GMPLS control software that can handle at least two layers was developed and implemented by each company. These GMPLS equipment are connected using control links (to exchange control messages holding routing information) and data links with over gigabit rate (Gigabit Ether, OC48, and OC192).

Since a wide variety of network equipment (e.g. IP routers and cross connects) will coexist in a GMPLS network, it is essential to verify interoperability between multi-vendor network equipment.



Fig. 3 The PIL booth at MPLS2003

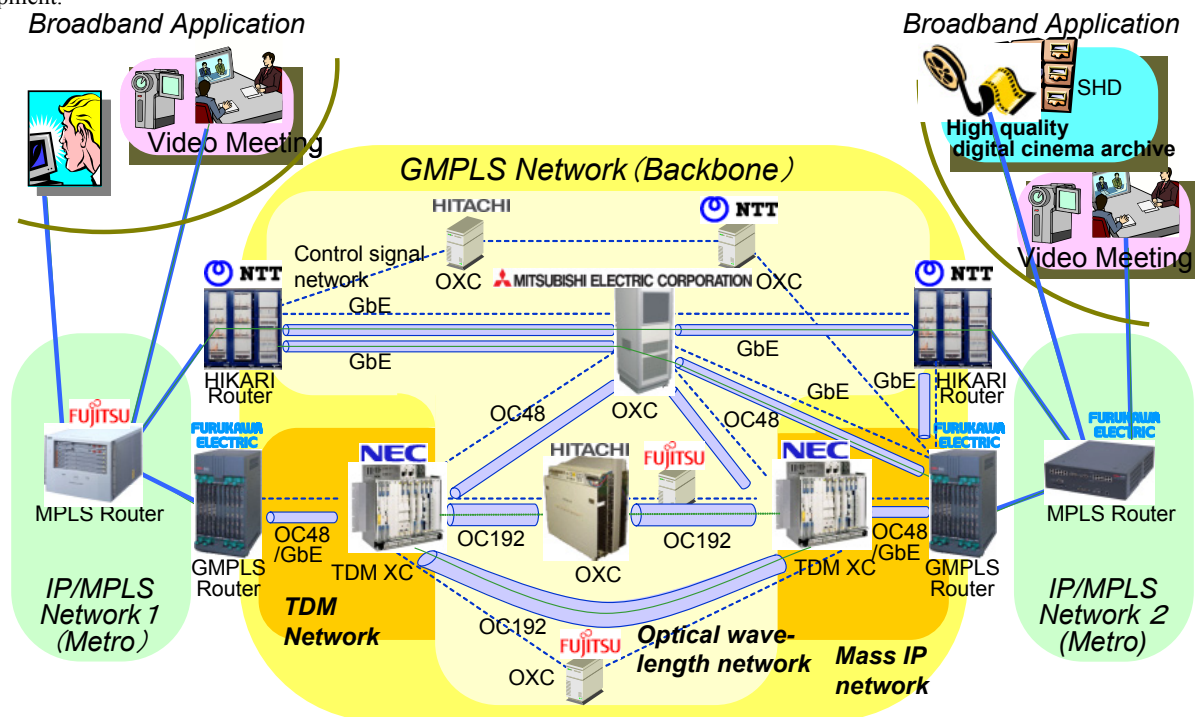


Fig. 4. Trial network setup using GMPLS and MPLS



Fig. 5 The booth of JGN2004

We have successfully realized the distribution and collection of routing information and the setup of paths in the multi-layer and multi-vender environment. It is possible to use the various communication paths provided (packet, TDM, wavelength, and fiber) according to the communication quality demanded.

In addition, this GMPLS backbone network supports two functions: seamless connection to Metro networks and high reliability. The former is realized by MPLS and GMPLS interworking technology. This technology was first verified in the multi-vender environment in October 2003; a world first.

This experiment successfully transmitted high-resolution video like digital cinema across MPLS and GMPLS networks. It confirms the feasibility of establishing an economical and highly-reliable IP network that offers high-resolution video transmission at reasonable cost.

The GMPLS equipment of NEC and Hitachi in this experiment include the results of research sponsored by TAO (Telecommunications Advancement Organization of Japan).

### 3.Future plans

This experiment was carried out by the Photonic Internet Lab (PIL). PIL has already conducted interoperability tests of a standard GMPLS protocol with a number of global companies at the interoperability site of ISOCORE <[www.isocore.com](http://www.isocore.com)> at Washington D.C, USA. PIL will promote the creation of new control technologies that can be accepted as international standards and the development of novel network services.



## IEICE Overseas Membership Page

The Institute of Electronics, Information and Communication Engineers

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<b>C. Electronics</b>	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
<b>D. Information and Systems</b>	ED:Trans. on Inf. & Syst.	Computation and Computational Models, Automata and Formal Language Theory, Algorithm Theory, Complexity Theory, Computer Components, VLSI Systems, Computer Systems, Fundamentals of Software and Theory of Programs, System Programs, Software Engineering, Database, Contents Technology and Web Information Systems, Data Mining, Networks, Dependable Computing, Application Information Security, Distributed Cooperation and Agents, Artificial Intelligence and Cognitive Science, Human-computer Interaction, Office Information Systems, e-Business Modeling, Educational Technology, Rehabilitation Engineering and Assistive Technology, Pattern Recognition, Speech and Hearing, Image Processing and Video Processing, Image Recognition, Computer Vision, Computer Graphics, Multimedia Pattern Processing, Natural Language Processing, Biocybernetics, Neurocomputing, Biological Engineering, Music Information Processing, Kansei Information Processing, Affective Information Processing

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\*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.

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The Institute of Electronics, Information and Communication Engineers

URL <http://www.ieice.org/eng/member/OM-appli.html> E-mail [member@ieice.org](mailto:member@ieice.org)

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

### Personal Information

**Full name:** \_\_\_\_\_ **Nationality:** \_\_\_\_\_  Male  Female  
First name Middle name Last name

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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.

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I recommend this applicant for IEICE membership.

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Endorser's name Membership number Endorser's signature Date

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## From Editor's Room

### ● THE GOLDEN WEEK in Japan

Do you know the Golden Week in Japan ?

There are various national holidays in each country. Also in Japan, there are various national holidays. Especially, a collection of some national holidays in the last week in April and the first week in May is commonly called 'The Golden Week' in Japan. Indeed, it is possible to take an eleven days' holiday in this year if suitable paid holidays are combined as follows.

- 4/29(Thu) Green Day (Midori no hi): national holiday
- 4/30(Fri) Paid holiday
- 5/1(Sat) Weekend holiday
- 5/2(Sun) Weekend holiday
- 5/3(Mon) Constitution Day (Kenpo kinenbi): national holiday
- 5/4(Tue) Holiday by law (Kokumin no kyu-jitsu): national holiday, if two national holidays are separated by only one day, the day in between is also turned into a national holiday by Japanese law.
- 5/5(Wed) Children's day (Kodomo no hi): national holiday
- 5/6(Thu) Paid holiday
- 5/7(Fri) Paid holiday
- 5/8(Sat) Weekend holiday
- 5/9(Sun) Weekend holiday

And me ? I don't take paid holidays, and edit this newsletter in this Golden Week...(sigh)

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## Scope

Driven by the continuous growth in the power, intelligence and openness of computer, communication and control technologies, possibilities and opportunities for realizing highly efficient and dependable business and control systems have been steadily increasing. Dynamically changing social and economic situations demand next-generation systems based on emerging technologies and applications. Such systems are expected to have the characteristics of living systems composed of largely autonomous and decentralized components. Such systems are called Autonomous Decentralized Systems (ADS).

After the successful first, second, third, fourth, fifth and sixth International Symposium on Autonomous Decentralized Systems (ISADS) held in 1993 in Japan, in 1995 in the USA, in 1997 in Germany, in 1999 in Japan, in 2001 in the USA and in 2003 in Italy, the 7th ISADS will be held in Chengdu, China during April 4-6, 2005.

While ISADS 2005 will primarily focus on advancements and innovation in ADS concept, technologies and applications related to **Ubiquitous and Autonomous Computing**, other themes such as telecommunications and heterogeneous system and application integration will also be included.

The ISADS 2005 committee invites papers and proposals of workshops and panels on the topics of the symposium that will foster interactions among researchers and practitioners in computer, communication, management, control and other related fields from academia, industry and government.

The scope of discussions on ADS shall include, but not be limited to:

- \* Computer and communication architectures / intelligent network / Internet;
- \* Heterogeneous distributed information / control systems;
- \* Mobile agent / computer-supported cooperative works;
- \* Distributed software development and maintenance;
- \* Assurance, fault tolerance and on-line expansion;
- \* Object management architecture / design pattern / application frameworks;
- \* Emergent control and robotic systems;
- \* Autonomic Computing;
- \* Sensor Networks;
- \* Adhoc Networks;
- \* Novel applications: electronic commerce and government, telecommunications, information service systems, manufacturing systems, real-time event management, office automation, traffic and transportation control, logistics systems.

## Information for Authors

Papers should describe original work (not submitted or published elsewhere) and be 20 double-spaced pages (5,000 words) or less in length. Papers should include: title, authors, affiliations, 150-word abstract and list of keywords. Identify the author responsible for correspondence, including the author's name, position, mailing address, telephone and fax numbers and email address. One of the authors of each accepted paper must present the paper at ISADS 2005.

## Information for Workshop and Panel Organizers

Workshop and panel proposals should include: title, organizer's affiliations, position, mailing address, telephone and fax numbers, email address and 150-word statement on the scope.

## Submission Address

Authors and organizers of workshops and panels are requested to submit their manuscripts electronically following the instructions at the web site:

<http://www.softconf.com/start/ISADS05/>

## General Information

For general information, see our World-Wide Web Page at:

<http://isads05.swjtu.edu.cn/>

If you have any question, please send E-Mail to: [isads05@home.swjtu.edu.cn](mailto:isads05@home.swjtu.edu.cn)

The proceedings of the symposium and the workshop will be published together by IEEE Computer Society Press.

## Important Deadlines

June 1, 2004: Workshop proposals due.

July 1, 2004: Workshop organizers notified of acceptance.

July 7, 2004: Call for papers of workshops.

August 15, 2004: All of symposium and workshop papers due, and panel proposals due.

October 30, 2004: Authors and panel organizers notified of acceptance.

December 15, 2004: Camera-ready copies of accepted papers and panelists' position papers.

## Call for Papers

# IEICE Transactions on Communications Special section on Ubiquitous Networks

The IEICE Transactions on Communications announces a forthcoming IEICE special section on "Ubiquitous Networks" to be published in **March 2005**.

Relentless progress in both wired and wireless network technologies continues to enable us to access various and huge amount of appliances, devices as well as multimedia contents on the Internet. This trend is expected to accelerate the development of richer and innovative services beyond traditional Internet applications, and to bring us the future ubiquitous network environment in which we can utilize convenience services anytime and anywhere through various types of network connections. Making such future environment, however, requires development and implementation of wide variety of technologies including well-designed scalable network systems, sensor networks, flexible software platforms, smart devices, RFIDs, embedded technologies, context-aware technology and so on.

The IEICE special section on "Ubiquitous Networks" will cover these technologies, but will mainly focus on network systems.

### Scope

Scopes of the special section include, but are not limited to, the following technologies:

- (1) Network technologies for Ubiquitous/Pervasive Computing  
Network Control and Management Technologies, Middlewares, Security and Privacy, Smart Space Technologies, Zero-administration technologies, etc.
- (2) Enabling Technologies  
Sensor Networks, Location Information System, Context-aware Technologies, Smart Devices, Embedded Technologies, RFID, etc.
- (3) Applications  
Context-aware Applications, Location-aware Applications, Sensor Network Applications, Entertainment and Gaming Applications, etc.

### Submission Instructions

The submitted papers will be reviewed by referees according to the ordinary rules of the Transactions Editorial Committee (<http://www.ieice.org/eng/authors.html>). Prospective authors are requested to submit complete manuscript in PDF or Microsoft Word format, the length of which is recommended to be within 8 printed pages, on or before **July 23**, to the following e-mail addresses. This special section only accept regular papers (letters are not accepted). Please note that we accept e-mail submission only (excluding Copyright Transfer Form).

Hisaya Hadama (NTT Network Innovation Laboratories),  
Masateru Minami (Shibaura Institute of Technology),

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7-3-14 Shibaura, Minato-ku, Tokyo, 108-8548, Japan.

### Submission Deadline

**July 23, 2004**

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