IEICE Communications Society GLOBAL NEWSLETTER *Vol. 5*
Contents

Communications Society Always Contributes to IT Infrastructure

Yoshinori Sakai
President, Communications Society

Core technologies of communications society have been rapidly changing. Public Switched Telephone Network (PSTN) has been most significant application of the technology being discussed in the communications society. Recently, the total number of PSTN terminals has been decreasing. On the other hand, the number of mobile terminals and the use of the Internet has been growing rapidly. Telephone terminals might be replaced by IP-phones and mobile terminals in the near future. “Mobile” “Ubiquitous” “IPv6” “Broadband”, and “Multimedia” are key words in the telecommunication field. Most of the students who have undergraduate/graduate degrees in telecommunications have been employed by telecommunication companies and manufacturers. In what fields will they work in future. Maxwell’s theory, Shannon theory and queuing theory have been basic theories driving many advances of the society. What kinds of theories will be the basis of our society?

Communications society should contribute to establishing “IT infrastructure”. IT infrastructure includes, hardware and software that make up communication network and computers. It also includes natural and social sciences that contribute to advances in IT. Communications society must provide opportunities for discussion, and the exchange journal paper and new knowledge.

The technical areas covered by the communications society include basic and application technologies that will create a better future communication network and a communication and information theory for IT infrastructure. We have sixteen standing technical committees and ten temporal adhoc committees. The adhoc technical committees are discussing new prospective technical fields and application technologies. Many presentations and discussions are held at technical committee meetings, ones concerning current and future technologies for communication. Recently, committees have held domestic and, sometimes, international conferences. New adhoc technical committees concerning network community have been established. As a result, our society currently covers wireless and mobile communication, network technology including both the traditional telephone network and the Internet, optical communication technology, energy engineering, electromagnetic compatibility and a new technology and science to build a network community. Our society has been growing by forming new technical committees that cover new technologies.

The telecommunication industry is doing poorly financially now. However, IT infrastructure is the basis of present day society. The activities of government, education, and private industry will be shaped by IT. Also, the basis of a ubiquitous society is IT infrastructure. However, IT infrastructure cannot be build only by engineers. Cooperative work between engineers, scientists, lawyers, politicians, and economists can enhance IT infrastructure. For example, the cooperation between mathematicians and lawyers can improve network security. Many social scientists are interested in community network.

As a society that is responsible for IT infrastructure, our society must encourage and improve cooperative work done by all people who contribute to IT infrastructure. Technical committee activities are most important in the communications society. Technical committees must change according to the needs of the IT industry. We have to develop not only new technologies, but also a new science. New theories are also necessary for the new IT society. It might include social sciences as well as mathematics and physics. This year, our society will try to make a roadmap of the fields that will be discussed by society. Technical committees should cover the roadmap and, as a result, it should provide the chances to discuss concerning IT society to all the people, including scientists, engineers, and also lawyers and politicians. I hope, exciting discussion will be held at all the meetings and conferences held by communications society.

通信ソサイエティと IT インフラストラクチャ

酒井　善則
会長

通信ソサイエティが扱っている分野の基盤技術は最近大きな変貌をとげている。従来は通信ソサイエティで議論している技術の最大の応用先は公衆電話網であった。近年、固定電話端末数は急速に減少している。これに対して携帯電話端末数、インターネットトラヒックが急速に増加している。将来固定電話は、IP 電話、モバイル端末に置き換えられるかもしれない。モバイル、ユビキタス、IPv6、ブロードバンド、マルチメディアが通信分野のキーワードになろうとしている。従来は通信分野で学部、大学院を修了した多くの学生が電話会社あるいは通信機器製造会社に就職した。将来、彼らはどのような分野で働くこととなるのだろう。マクスウェルの方程式、シャノン理論、待ち行列理論は通信分野の重要な基礎理論であった。今後はどのような理論が通信ソサイエティの基礎理論となっていくのだろう。

通信ソサイエティの責務は今後も IT インフラストラクチャ（インフラ）を形成することに貢献することである。IT インフラは通信ネットワークおよびコンピュータを構築するためのハード、ソフトとともに、IT を構築するための基盤となる自然科学、社会科学も含んでいる。通信ソサイエティの最大の責務は、議論の機会の提供、新しい知識の紹介、論文投稿などにより IT インフラの構築に寄与することである。

通信ソサイエティが担当する技術分野は将来の通信ネットワーク構築のための基礎技術、応用技術、更には IT インフラ構築のための通信理論、情報理論を含んでいる。ソサイエティ活動の中心となる研究専門委員会について見ると、通信ソサイエティには現在 16 の常設研究委員会、10 の時限研究専門委員会があり、活発な研究活動が行われている。時限研究専門委員会は将来期待できる新しい技術分野や応用技術の検討を行っている。これらの研究専門委員会では現在および将来の通信技術に関する技術が検討されている。近年、研究専門委員会は国内および国際的なシンポジウムも開催している。更に、最近ネットワーク社会を対象とする新しい時限研究専門委員会も設立された。以上の結果、ソサイエティは現在、無線・モバイル通信、伝統的な電話とインターネットを含むネットワーク技術、光通信、電源技術、電磁界干渉、更にはネットワーク社会発展のための科学技術も対象としている。通信ソサイエティは新しい分野を担当する新しい研究専門委員会を産み出しながら発展している。

通信産業の経済的状況は必ずしも順調ではないが、いずれにせよ IT インフラは現代社会の基礎である。政府・教育・産業活動の基盤は IT により作られている。しかし、IT インフラは技術者のみでは創ることはできない。技術者、科学者、政治家、法律家、エコノミストの共同作業により IT インフラをより高度なものにすることができる。例えば、暗号理論を研究する数学者と法律家の共同作業によりネットワークセキュリティをより強固にできる。最近は多くの社会科学者がネットワーク社会の議論に参画している。

IT インフラの中心となるソサイエティとして、通信ソサイエティは多くの分野の専門家の共同作業が可能となるよう力を尽くす必要がある。ソサイエティの中で特に研究専門委員会の活動は重要である。研究専門委員会は IT 産業界のニーズの変遷に従って成長していく。従って、我々は新しい技術だけでなく、新しい科学を創造していく必要がある。新しい IT 社会には新しい理論が必要となる。新しい理論は物理、数学とともに社会科学も必要とするかもしれない。今年度ソサイエティでは、今後対象とする分野を明らかにするためロードマップを作ろうとしている。各研究専門委員会の活動はこのロードマップ上に位置つけられることとなり、全ての重要分野について研究専門委員会が担当することとなる。この結果、ソサイエティは全ての関連分野の研究者に IT 社会について議論する機会を与えることができる。この中には科学者、技術者、法律家、政治家も含まれる。あらゆる分野の方の活発な議論が通信ソサイティの場で行われることを期待している。

Goodbye Ms. Antennas !

Masaaki Shinji, Fellow
Tokai University

On March 5, 2003, a farewell party to satellite communication antennas was held at NTT Network Laboratory in Yokosuka. The party is to say good-bye to experimental earth station antennas which were to be removed and perhaps scrapped following the mission end of fixed satellite communication system R&D activities within NTT. The antennas to be removed are the Cassegrain antennas 12.8m and 11.5m in diameter The former was build in 1972, designed for 4 frequency bands of 4/6, and 18/26GHz, the reflector being mounted on a pedestal and made fully steerable toward the celestial hemisphere as other earth station antennas for international satellite communications.

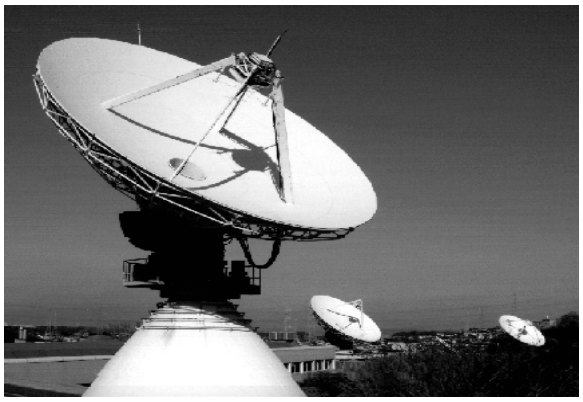


Figure 1: Expermental earth station antenna for 4/6, 18/26GHz bands with 12.8m diameter..

Figure 2: Experimental earth station antenna for 20/30GHz bands with 11.5m diameter.

The first Japanese experimental communication satellite, CS(SAKURA), with which she was to enjoy communications, was launched only in 1977. Until then, she was alone almost 5 years without her real partner! (The word “antenna” is treated as feminine in French and German. I prefer this idea.) She was busy, however, during these years. She contributed to various experiments, such like communications with transponders as the collimator, antenna gain measurements using radio stars as Cassiopeia A, VLBI(Very Large Baseline Interferometer) experiment by CRL(Communication Research Laboratory), etc.

The 11.5m antenna was installed in 1977, its operating frequencies being 20/30GHz bands. She was limited steerable by means of two lead screws with simplified structures designed for mounting on roof tops of telephone stations.

Introduction of satellite communications into Japanese domestic communication systems, this very idea was initiated by Dr. Yonezawa, the then President of NTTPC(Nippon Telegraph and Telephone Public Corporation). He urged that on every roof top of regional centers of public telecommunications network, the antenna with the diameter less than 10m should be put in use for domestic satellite communications.
R&D activities started in line with this direction.

Almost 30 years were passed since then, and the time has come to say goodbye to those antennas. To the director of NTT network laboratory, an OB, supposedly of an antenna research group is said to have said, “ Hay, you are going to scrap my youth too, aren’t you?”

In 1982 and 83, the first Japanese commercial communications satellites, CS-2a and 2b were put into orbits and the commercial operation of satellite communication system within Japanese telecommunication network began. On roof top of regional centers, 20/30GHz offset Cassegrain antennas were installed. All those antennas were also already removed, and the satellites, N-STARs, are now mainly serving for mobile communications, as well as fixed communications for remote islands and emergency reserve circuits.

At the end of short story of rise and fall of earth station antennas, let me try brief comparisons of these antenna performances at 20GHz band. The measured aperture efficiencies and noise temperatures of 12.8m

center-fed, 11.5m center-fed and 11.5m offset-fed Cassegrain antennas are 56, 70, 73% and 37, 15, 15K, respectively. The measurement conditions are not always the same.

Figure 3: Commercial offset Cassegrain antenna with 11.5m diameter on the roof top of Shinjyuku regional center.

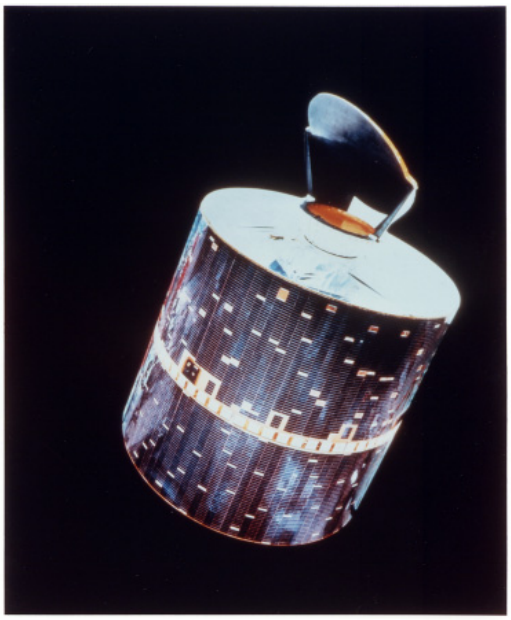


Figure 4: Communications Satellite CS-2a (artist view).

Call for logo-mark design of Communications Society

IEICE Communications Society (CS) invites the logo-mark used as the symbol of the Communications Society. First of all, a design is widely invited from members, and after determining the design adopted by the selection committee whom CS steering committee submits, if needed, a specialist will modify the adopted design.

Submission:

Authors are requested to send their design proposal in Adobe Acrobat .PDF format by e-mail. The design by freehand will be acceptable by FAX. In addition, please attach explanation of a design concept as much as possible.

Submission Address:

Masato Tanaka
Communications Society plan manager
(Communications Research Laboratory)
TEL : +81-42-327-7608
FAX : +81-42-327-6834
e-mail : masato@crl.go.jp

Deadline (tentative)**: October 31, 2003**

If you have any question, please contact to following plan manager.

Masato Tanaka (Communications Research Laboratory)
TEL : +81-42-327-7608
FAX : +81-42-327-6834
e-mail : masato@crl.go.jp
Noboru Edagawa (KDDI R&D Laboratory)
TEL : +81-49-278-7837
FAX : +81-49-278-7844
e-mail : edagawa@kddilabs.jp

通信ソサイエティのロゴマークデザイン募集のお知らせ

通信ソサイエティではソサイエティのシンボルとなるロゴマークを募集します．ロゴマークはまずは会員の皆さんから広くデザインを募集し、運営委員会が諮問する選考委員会で採用するデザインを決定した後、必要に応じて採用されたデザインを専門家に修正してもらうこととします．

応募方法は以下のとおりです．

応募期間：2003 年 10 月 31 日まで

応募方法：デザイン案をＰＤＦファイル形式で作成し、e-mail で下記までお送りください．また、手書きのものはＦＡＸでも受け付けます．なお、できるだけデザインコンセプトの説明をつけてください．

送り先：田中正人
通信ソサイエティ企画幹事
（通信総合研究所）
ＴＥＬ：042―327―7608
ＦＡＸ：042―327―6834
e-mail：masato@crl.go.jp

質問等のある方は下記の企画幹事までお問い合わせください．

田中正人（通信総合研究所）
ＴＥＬ：042―327―7608
ＦＡＸ：042―327―6834
e-mail：masato@crl.go.jp

枝川登（KDDI 研究所）
ＴＥＬ：049―278―7837
ＦＡＸ：049―278―7844
e-mail：edagawa@kddilabs.jp

Technical Committee on Space, Aeronautical and Navigation Electronics (SANE) (2003 FY)

Chair; Korehiro Maeda, NASDA* Vice chair; Yoshiaki Suzuki(CRL)
Secretariat; Noboru Takata, NASDA. and Yoshinori Arimoto, CRL

1. Introduction

The Technical Committee on Space, Aeronautical and Navigation Electronics (SANE) has conducted various activities in 2002 FY.

In May, 2003, new chairman of SANE is Dr.Korehiro Maeda (NASDA). Dr.Noboru Takata (NASDA) is still secretariat of SANE. New vice chairman and new secretariat are Dr.Yoshiaki Suzuki (CRL) and Mr.Yoshinori Arimoto (CRL), respectively

In 2002-2003, various satellites such as MDS-1 (Feb.,2002), DRTS/USERS (Sep.,2002), ADEOS-II / μ-LabSat, WEOS, FedSat, MUSES-C were successfully launched in Japan. Results of these satellites were presented in SANE regular meetings, IEICE general conference. In 2004, various satellites such as MTSAT-1R, ALOS, ETS-VIII, MTSAT-2 will be launched and these results will be presented in SANE regular meeting and IEICE conference.

* NASDA is going to be reborn as Japan Aerospace Exploration Agency (JAXA) on October 1, 2003 merging with the Institute of Space and Astronautical science (ISAS) and National Aerospace Laboratory of Japan (NAL).

2. Area of Interest

The 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:

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

3. Activities

The SANE regular meetings are organized with IEEE AES Japan chapter and other related technical groups. Table 1 shows the schedule of the meetings on FY2003 seasons.

Table 1 SANE regular meetings 2003-04

Date	Place	Main Themes	Co-organizer
Apr. 25	Nippon Institute of Technology (Saitama)	Radar signal processing	
May.30	Kochi University of Technology (Kochi)	Remote sensing	
Jun.27	Tsukuba Space Center, NASDA (Ibaraki)	Space Applications Symposium	Sponsored by NASDA
Jul. 25	Electronic Navigation Research Institute. (Tokyo)	Navigation and traffic control	
Aug.29	Shinshu University (Nagano)	Radar navigation	
Sep. 11-12	Kyoto University	Subsurface measurement workshop	MMIJ/ SEGJ
Nov.28	ISAS	Environmental measurements	
Dec.19	Chiba Institute of Technologies	Environment sensing	
Jan.30	Kobe Aeronautical Center	Navigation	
Feb.27	Communications Research Laboratory	Satellite application technologies	SAT

4. Major Topics

Examples of major topics in space technologies are as follows:

[Earth Observation]

AQUA and ADEOS-II were successfully launched on May 4,2002 and Dec.14, 2002, respectively. Figures 1 and 2 show sea surface temperature and snow depth images obtained by AMSR-E mounted on AQUA, respectively. Figures 3 and 4 show ADEOS-II overview and various products using GLI data of

ADEOS-II, respectively. Fig 4 shows that the primary productivity is remarkably high in mid-high latitude coastal regions

ALOS will be launched in 2004 to monitor earth environment. The launch of Multi-functional Transport SATellite (MTSAT)(Aeronautical and Meteorological satellite) series will be delayed to 2004; MTSAT-1R will be launched in Jan. or Feb. in 2004 and MTSAT-2 will be launched in 2004. GOSAT to observe green-house effect gas and GPM/DPR to measure global rainfall distribution will be launched in FY 2007.

[Communication]

DRTS (Data Relay Test Satellite) to transfer data from earth observation satellites and the International Space Station to the ground station in Japan was successfully launched on Sep. 10, 2002 and first earth observation data from ADEOS-II has been transferred via DRTS to Japan on Feb., 17. This is the first experiment using Ka-band data relay system.

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 satellite communication. Optical intersatellite communication experiment between OICETS and ESA's ARTEMIS is still planned in 2007. Quasi-zenithal satellite (ex. figure-8 satellite) system are studied conceptually for the applications including mobile satellite communications at a high elevation angle, satellite-based positioning and will use half of the band 2605-2630MHz (Japan and Korea) as broadcasting-satellite service (sound) which has been allocated in WRC-2003.

[Space station]

JEM FM was tested in Tsukuba Space Center, NASDA and transported to USA by ship and installed in Kennedy Space Center, NASA on June 4, 2003. Various experiments using JEM are planned and JEM FM will be launched and constructed by space shuttle in FY2005-2007.

[Technology demonstration]

MDS-1 was launched in Feb.4, 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 higher radiation environment using geostationary transfer orbit are 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 micro-gravity environment. Recovery was realized early in the morning on May 30, 2003 and capsule was found around 10 am off Ogasawara island.

Small satellites (50kg) such as μ-LabSat (NASDA), and WEOS (Chiba Institute of Technology), FedSat (Australia) were launched with ADEOS-II as piggyback on Dec. 14, 2002. μ-LabSat was constructed by NASDA engineers and various experiments have been successfully conducted in collaboration with CRL and NAL.

[Science]

The MUSES-C was successfully launched from Kagoshima Space Center by M-V-5 launch vehicle on May 9, 2003. The MUSES-C spacecraft was renamed "Hayabusa" (falcon). MUSES-C will observe an asteroid and return rock sample to the earth in the summer of 2007.

SELENE has been developed to observe moon from circular orbit of the moon. and will be launched in FY2005.

These afore-mentioned results are presented in SANE regular meetings including Space Applications Symposium supported by NASDA held last Friday in June every year. They are also presented in SANE session in Society conference (Sep.) and General Conference (March).

5. Paper Submission to Regular Meetings

Authors are requested to pre-register to the secretariat via E-mail (sane_ac-chair@mail.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 corresponding author (Mail address, Fax number and E-mail address)

Please see the following website related with SANE:
http://www.ieice.org/cs/sane/jpn

Acronyms

ADEOS-II: ADdvanced Earth Observing Satellite-II

AMSR: Adavanced Microwave Scanning Radiometer

ALOS: Advanced Land Observing Satellite

DRTS: Data Relay Test Satellite

WINDS: Wideband InterNetworking 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

USERS: Unmanned Space Experiment Recovery System

WEOS: Whale Ecology Observation Satellite

GOSAT:Green-house effect gas Observation Technology Satellite

GPM/DPR:Global Precipitation Mission/Dual-frequency Precipitation Radar

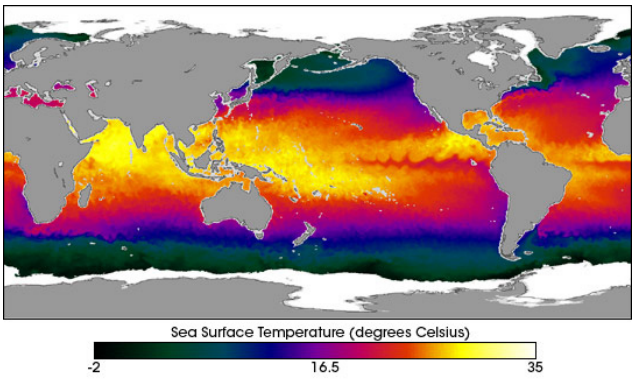


Fig.1 Sea surface temperature distribution observed by AMSR-E (June 3, 2003) (provided by NASA/NASDA)

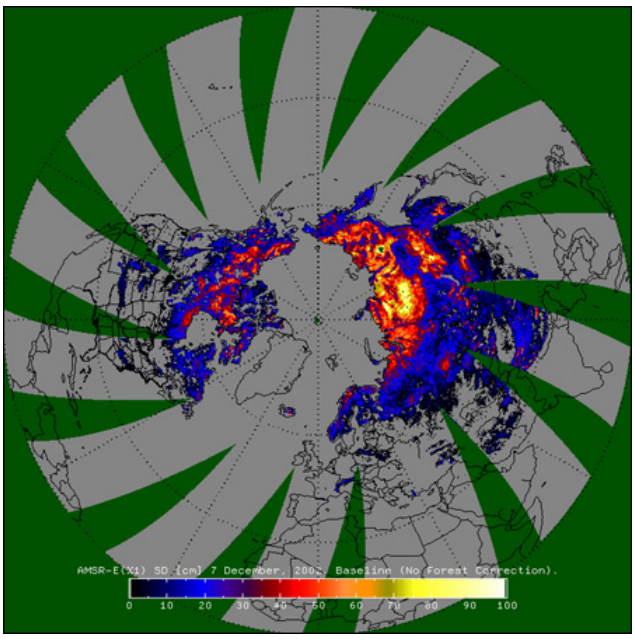


Fig.2 Snow depth distribution around north pole observed by AMSR-E (May 2, 2003) (provided by NASA/NASDA)

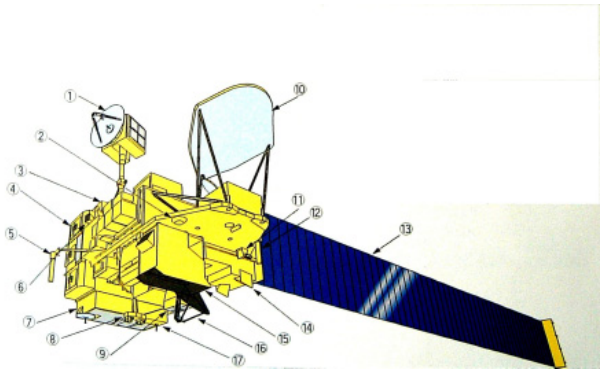


Fig.3 Overview of ADEOS-II

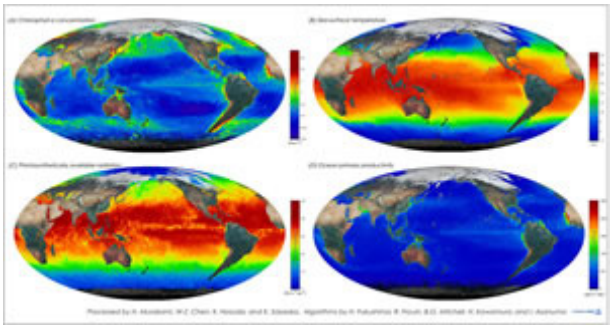


Fig.4 Products of ADEOS-II GLI data in April, 2003 (provided by NASDA)
top left: chlorophyll-a,
top right: sea-surface temperature
down left: photosynthetically available radiation
down right: primary productivity of ocean phytoplankton

Call for Papers

Special Issue on

Next Generation Networks Software

The IEICE Transactions on Communications announces a forthcoming IEICE special issue on "Next Generation Networks Software" to be published in July 2004.

1. Scope

Dissemination of the Internet has brought telecommunication network innovation in design ideas for function assignments between network and terminals, network configuration, reliability, security, etc. Study issues on interaction functions with existing networks and service control function for providing various services have been raised.

The objective of this Special Issue is to discuss technical issues on software which provides next generation network services, managing and operating network and controlling network, and to discuss problems on the development, test and evaluation of network software. It is also to present future network software technologies and existence of network services widely. Suggested topics include but are not limited to the followings. However, topics should be focused on network software technologies.

- Next generation network service control software
  Ubiquitous services, Software-based services for optical network, Real time multi-media streams, Social-ware, E-commerce, Authentication, Security, Copyright protection, E-learning
- Core technologies for next generation network software
  Bandwidth On Demand, IP securities, Mobile IP, IPv6, Protocol conversion, SIP, 4th generation mobile telecommunication,Ad-hoc network, P2P, Home-network
- Specific network software technologies
  Agent (Personal, Mobile, Network), Programmable network, Progressive software, Component (Self documentation, Introspection, Reflection, Container, Deployment), Open API (JAIN/Parlay), Java/EJB, Real time system, Highly reliable system, Distributed objects, Distributed processing platform, Development environment, Design paradigm, Specification description, Specification verification

2. Submission Instructions

The submitted papers will be reviewed by referees according to the ordinary rules of the Transaction 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 **November 14**, to the following address. "Special issue on Next Generation Network Software" should be on the top of the first page in red ink.

➢ Secretariat of Special issue on Next Generation Network Software
Masashi Yamada
NTT Network Service Systems Laboratories
3-9-11, Midori-Cho, Musashino-Shi, Tokyo,
180-8585 Japan
Phone: +81-422-59-6972
FAX: +81-422-59-2042
E-mail: yamada.masashi@lab.ntt.co.jp

3. Guest editors

● Guest Editor-in-chief:
Yasushi Wakahara (University of Tokyo) (Photo)

● Guest Editors:
Tsuyoshi Ando (Oki), Kenji Ishida (Hiroshima City University), Kiyoshi Ueda (NTT), Nagao Ogino (KDDI R&D Laboratories), Tadashi Ohta (Soka University), Yoshiaki Kakuda (Hiroshima City University), Kazumasa Takami (NTT), Yoshihiro Niitsu (Shibaura Institute of Technology), Masashi Yamada (NTT)

**** 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.***

2004 International Symposium on Electromagnetic Compatibility, Sendai (EMC'04/Sendai)

KOGA Ryuji
Department of Communication Network Engineering,
Okayama University,
(A Committee Member of the Symposium, Public Relations)

1. Scope

Electromagnetic compatibility (EMC) is widely recognized as a key concept in our highly electronic culture, and it goes without saying that EMC technologies are indispensable to our computer- and communication-driven society.

2. Schedule

The Symposium follows EMC'99/Tokyo and will be held at Sendai International Center, Sendai City, JAPAN, in the period of June, 1-4, 2004, chaired by Prof. Akira Sugiura, Tohoku University.

3. Topics

Below is the session topics list in the symposium. In paper submission, author's choice for the paper scope is required.

1) Measurement Techniques
2) EMC Test Facilities
3) System-Level EMC
4) Chip and Package Level EMC
5) PCB and Circuit Design for EMI Control
6) Coupling and Crosstalk
7) Transmission Lines and Cables
8) Immunity/Susceptibility
9) ESD, Lightning and Transients
10) Shielding and Grounding
11) EM Absorber
12) Numerical Modeling
13) Biological Effects and Safety
14) EM Environment Measurement
15) Power system EMC
16) Communication System EMC
17) EM Wave Propagation and Scattering

4. Important dates

November 15, 2003: Deadline for Full-length Paper Submission
January 31, 2004: Notification of Acceptance
March 15, 2004: Author's Registration

NOTE: At least one of the authors must register by the author's registration deadline. Otherwise the paper shall not be included in the Technical Programs nor appear in the Symposium Proceedings.

5. Submission

Full-length camera-ready papers in PDF format should be submitted via web site. This web-based submission system will start on October 1, 2003. Your paper should be sent via our web submission system as an attached file in PDF format by November 15, 2003. Faxed submissions will not be accepted. To maintain the same look when viewing or printing your paper on another machine, you should embed all fonts used in the file.

6. Contacts

Up-to-date details will appear at the web site,
http://www.ieice.org/emc04/ ,
which will be renewed as the organization proceeds. Contact address is
emc04@dev.cne.okayama-u.ac.jp
of Prof. Ryuji Koga, Okayama University, who is in charge of public relations of the symposium committee.

7. Sponsors and organizations

The symposium is sponsored by The Institute of Electronics, Information and Communication Engineers, Communicaions Society(IEICE-CS), cosponsored by Intelligent Cosmos Academic Foundation, Senda, and is in cooperation with The Institute of Electrical Engineers of Japan, and Technical Committee on EMC(IEEJ TC-EMC) , as well as with IEEE EMC Society, IEEE Sendai Section, and IEEE EMC-S Japan and Sendai Chapters. The symposium is supported also by URSI, CISPR, IEC/TC77.

Organization of the symposium is described in its web site.

Fig.1 Sendai International Center

OKI's R&D activities for IP photonic harmonized network

Yoshihiro NAKAHIRA
Network Systems Incubation Division, IP Solutions Company,
OKI ELECTRIC INDUSTRY, CO., LTD.

1. Introduction –IP photonic harmonized network for the next generation broad band network-

Recently, the number of IP broadband users has been increasing rapidly in Japan. Now, more than 10 million people are connecting the internet with broadband access lines; so the response time in web browsing or required time for file transfer has been reduced. However, it is the only a starting point of our broadband network life. We will enjoy much more useful, beautiful, and comfortable services with reasonable cost. For these services, network systems have to have much larger capacity, the functions for QoS(quality of service) or CoS(class of service) and more intelligent OAM (operation, administration and management) mechanism. To realize the system, there must be many approaches. One of the approaches is our "IP photonic harmonized network". In our opinion, the advantageous points of electric IP technology and Photonic technology are different as shown in Table 1; therefore, we should use both technologies to maximize the potentials by harmonizing them. So, the objectives of our study are "how to maximize the advantages of electrical IP and photonic technologies" or "how to realize the applications on this network concept".

Table 1 Electrical IP technology and photonic technology

	Electrical IP technology	Photonic technology
Large umber of channels	◎	△
Large throughput switching	△	◎
Packet switching	◎	△
Transparency	△	◎
Liner bandwidth assign	◎	△
Strict QoS	△	◎

2. Expected application of IP photonic harmonized network and its architecture

The followings are examples of applications of the IP photonic harmonized network technology.

① Enlargement of network or node throughput by IP optical cut-through [1]
② Improvement of the efficiency of the network resources.
③ Bandwidth on demand service [2][3]
④ Optical virtual private network service [2][3]
⑤ Low cost protection/restoration service [2][3]
⑥ etc.

In addition, the following effectiveness can be expected.

(6)Operation cost reduction by the integration of control plane protocols

For these objectives, we assume an architecture of IP photonic harmonized network based on GMPLS architecture [4] as shown in Fig.1.

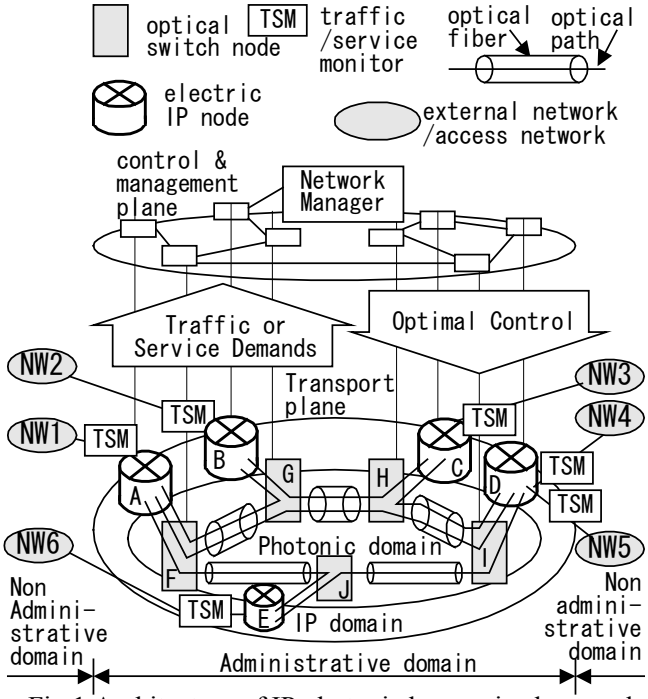


Fig.1 Architecture of IP photonic harmonized network.

In this architecture, the IP photonic harmonized network is composed of transport plane and control & management plane. The transport plane is also composed of IP domain and photonic domain. In the IP domain, IP nodes forward IP packets according to their header information, In the photonic domain, optical paths are allocated between IP nodes by optical switch nodes.

At the border of the administrative domain and non-administrative domain, traffic information or service demands are detected at TSM(traffic and service monitor). This information is sent to the network manager. Then, the network manager gives the optimal control instructions. The varieties of detected information or given instructions are different according to the purpose described in this section(1)-(6). In the following section, we will introduce the activities of research and development for a case (1) and related general traffic engineering technologies.

3. IP cut-through for large throughput network

Enlargement of network or node throughput by IP optical cut-through is one of the important applications of the IP photonic harmonized network. Usually, IP packets are forwarded by hop by hop manner; for example, packets from external network NW1 to external network NW3 are forwarded as follows; NW1 → A → F → G → B → G → H → C → NW3 in Fig.1. However, in this case, if the traffic between NW-1 and NW-3 and the traffic between NW2 and NW4 are large, IP node B and C have to forward very large relay traffic; in addition to this issue, lack of capacity of a path between node B and node C is worrisome. Therefore, in that case, we have proposed to use IP cut-through in photonic domain. According to our proposed system, as shown in Fig.2, path allocation is changed (A) to (B). In path allocation (B), optical paths are allocated to connect the two nodes directly in which large traffic flows; therefore relay traffic is dramatically reduced and concentration of traffic to a particular is avoided.

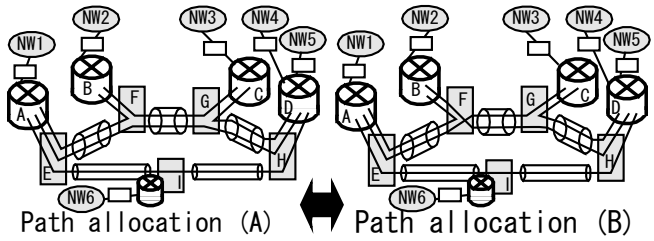


Fig.2 Optical path allocation rearrangement

For this system, the following mechanisms are required.

(1) Real time traffic monitoring and collection
(2) Optimal optical path allocation search
(3) Path rearrangement without IP reach-ability lack
(4) Optical signal quality guarantee in optical switch network

For these requirements, we have developed the following technologies which are needed for not only our proposed system, but also many kinds of general traffic engineering systems or optical systems.

3.1 Real time traffic monitoring and collection mechanism with network processor and active network technologies

For the real time traffic monitoring and traffic information collection & analysis mechanism, the following capabilities are required.

(1) High speed line(Gbit/sec~40Gbit/sec) monitoring.
(2) Easy change of monitoring items.
(3) Low traffic load in control network for information collecting.
(4) Low load in an information collection & analysis server PC.

We have developed real time traffic monitoring and collection mechanism with network processor and active network technologies for the above requirements. For the traffic monitoring (1)(2), there are two conventional approaches. The first is hardware oriented mechanism and the other is software oriented mechanism. The former is easy for high speed monitoring; however, it is not easy to change the monitoring items. On the other hand, software oriented mechanism has opposite features. Recently, The third candidate technology has been developed. It is network processor (NW-P). The NW-P technology is expected for both speed and flexibility. Therefore, we have developed traffic monitoring equipment using NW-P as shown in Fig.3(1).

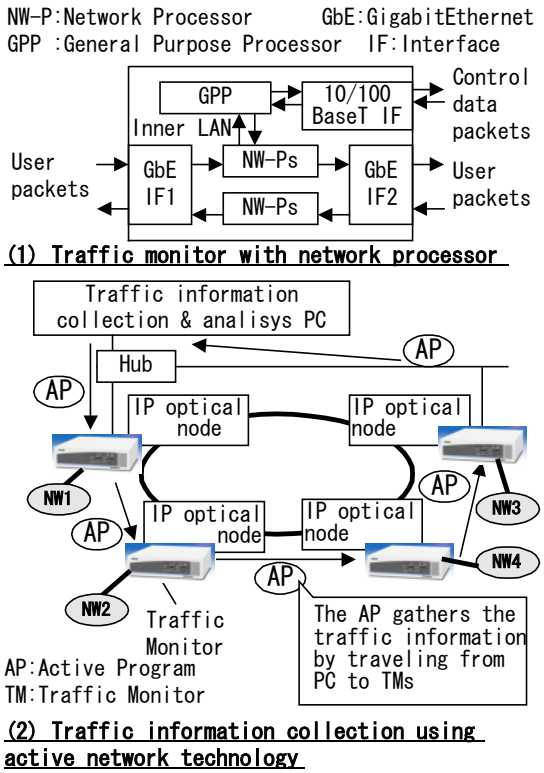


Fig.3 Traffic information monitoring and collection

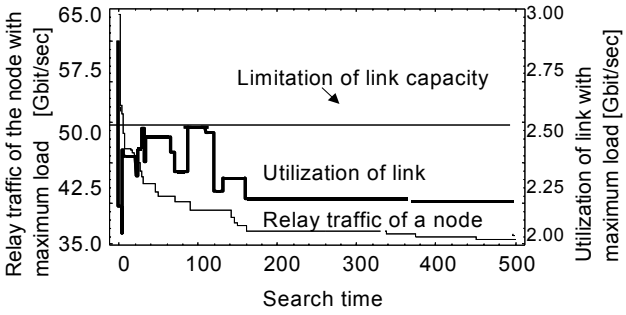
The next key issue is how to collect the information and analyze it. Usually, traffic information is collected by a server by polling mechanism. However, by this mechanism, the load of the server and load for control network near the server must be heavy. Instead of the polling mechanism, we have developed a novel mechanism using active network technology. In this mechanism, active programs are trips from traffic monitor to the next traffic monitor and calculate the amount of edge-edge traffic information from the traffic of source/destination IP address as shown in Fig.3(2).

3.2 Optimal path allocation search using genetic algorithms

In the traffic engineering world, we often have to try to find out the solution from the NP-hard problems[5]. For example, optimal bandwidth allocation for many classes of service traffic, or optimal path allocation including our issue, i.e. optimal path allocation and traffic forwarding route to minimize the relay traffic in the node, or maximize the margin of the bandwidth of each link. For this problem, heuristic approaches or probability approaches are used. Recently, genetic

algorithm (GA) has been developed[6] which has both advantages of heuristic and probability approaches. However, it is said that it is not easy to make this algorithm to posses the limitation of the value of the solution as the condition[6]. We have tried to introduce the limitation of link capacity (ex. 2.5G bit/sec) using penalty functions[7]. As a results, we have answers satisfying the limitation of conditions as shown in Fig.4.

Fig.4 An example of optimal path allocation search under the limitation of link capacity



3.3 Path rearrangement setting process without IP reach-ability lack.

For the optical path and traffic transfer route rearrangement setting process, keeping IP reach-ability is very important. For the IP reach-ability, we develop a process with (1) refuge of traffic from tear-down optical paths, (2) high-speed optical path setting using GMPLS, (3)re-allocation of network address of IP node interfaces. (4) re-assignment of IP packet forwarding route table.

3.4 Optical signal quality guarantee and verification in optical switch network

In optical network, with the all optical switching node, optical signal quality guarantee mechanism is required We have considered an optical signal quality guarantee mechanism using path allocation with domain division[7].

4. Experiment of IP cut-through

We have developed dynamic optical path and traffic transfer route rearrange test-bed system with (1)traffic information monitoring, collection & analysis mechanism, (2)optimal optical path allocation search mechanism, and (3)IP nodes and optical sw nodes setting rearrangement mechanism without IP reach-ability lack using GMPLS as shown in Fig.5. In this experiment, about 150 seconds is needed from traffic condition change to the finish of optical path allocation and reassignment of IP traffic transfer routes including search time. It seems that this is the first experiment of IP photonic cut-through with IP traffic monitor.

5. Conclusion

We've introduced OKI's R&D activities for IP photonic harmonized network.

6. Acknowledgments

A part of this work is supported by Tele-communications and Advancement Organization-of-Japan (TAO).

7. References

[1] Y. Nakahira, " An IP/ATM over WDM system for ultra high speed and quality guaranteed backbone network", ITU-T Telecom99, Inf.4-2,Geneva, Oct.,1999

[2] Y.Nakahira et.al. "An optical system and total traffic engineering ",IEICE, CS2000-22, June, 2000 (Japanese)

[3] D.Benjamin, "Optical services over the intelligent optical network", IEEE comm. magazine, pp73-78,Sep.,2000

[4] Eric Mannie, et.al." Generalized Multi-Protocol Label Switching Architecture" IETF draft draft-ietf-ccamp-gmpls-architecture-07.txt

[5] N.Nagatsu, et.al. "Optical path accommodation design enabling cross connect system scale evaluation", IEICE Trans. Commn.,vol.E78-B,no.9,pp1339-1343,Sep. 1995

[6] K.Saka, "Genetic algorithm" published by Asacura

[7] A.Fujii, Y.Nakahira,"Optical path allocation using Genetic Algorithm", Proc of IEICE conf., SB5-2, Mar.2003

[8] Y.Nakahira,"A study of optical path setting procedure for the MPLambdaS network", Proc of IEICE conf., SB10-3, Mar. 2001.

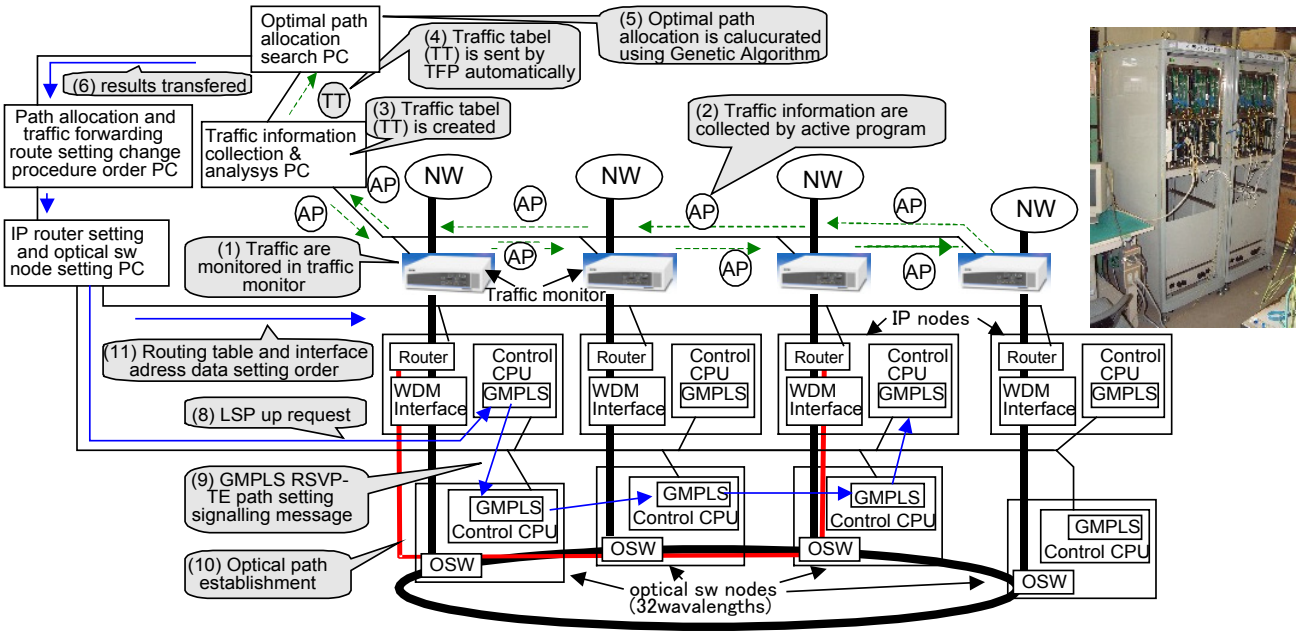


Fig.5 IP photonic cut-through test-bed system.

Trends of IrFM (Infrared Financial Messaging) Technology in Korea

Toshihiko Wakahara
Fukuoka Institute of Technology

1. Introduction

IrDA (Infrared Data Association) [1] is an International Organization, which was established in 1993. IrDA had already published various infrared data communication protocols from the physical layer to the application layer. As IrDA modules are very simple and provide low cost communication means, they have become very popular and are used in most of note personal computers, mobile phones, digital cameras, etc. IrMC (Infrared Mobile Communication) is specified for exchanging information, such as phone addresses and schedule information between cellular phones and other mobile equipments. Recently IrFM was proposed and its specifications were revised on February 2002. The IrFM is a next generation mobile payment protocol and enables the virtual payment without physical credit cards, checks or cash. This paper presents the recent IrFM technology trends in Korea.

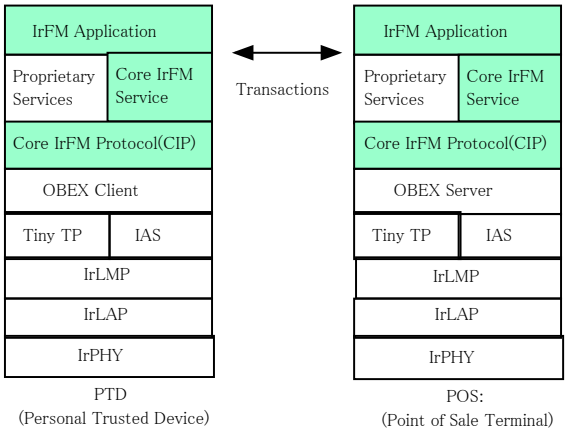
2. IrFM Outline [2]

IrFM is a proximity payment protocol and can be used as an electrical payment of Vending Machine, Credit or Debit Card by a mobile instrument, such as a cell phone. This protocol provides a safety, contact-less and cashless payment services.

A transaction flow model by IrFM is shown in Figure 1. IrFM can be applied between users (IrFM Client) and participating merchants (IrFM Server).

Fig.1 IrFM transaction flow

IrFM protocol stack is shown in Figure 2. The Core IrFM Protocol (CIP), Core IrFM Service and IrFM Application are put over the OBEX. The left side of this figure shows the client and the right one the server. The IrFM Client is the Point of Sale (POS), while the IrFM Server is the Personal Trusted Device (PTD). The IrFM Client is defined as the device seeking payment and will control the order of events within the transaction. The IrFM Server is defined as the "Paying" device and will respond to requests made by the client.



IrLAP: the link level protocol specified in [IrLAP].

IrLMP: a multiplexing layer specified in [IrLMP].

Tiny TP: this provides flow control and is specified in [TTP].

IAS: is the Information Access Service specified in [IrLMP].

OBEX: this includes both a session level protocol and a description of how services are built. Both are specified in [IrOBEX].

Fig. 2. IrFM protocol stack

The CIP is designed to provide information on data that is exchanged between the POS and a PTD. IrFM services will use CIP to pass objects using OBEX commands.

3. IrFM Conference in Korea and Current Situation

IrFM Point and Pay Profile was completed on 2002 February after two years intensive standard work. In the developing of this specification, VISA International Credit Company supported and contributed very much. The implementation of IrFM was realized and experimented for the first time in Korea. The International Conference on "Mobile Payment World Conference & Exhibition 2002" was hosted by inews24 and IrDA and was held at Korea Grand Intercontinental Hotel last October 15 as shown in Figure 3. Prior to this conference, IrDA General meeting was also held at the same Hotel. More than 500 people participated in this conference and Korean venture company, "Harex Infotech Inc." and two major carrier company SK Telecom and LG Telecom demonstrated various IrFM mobile payment systems in the exhibition.

Fig.3 Mobile Payment Conference & Exhibition 2002 (Oct. 15, 2002 in Korea).

The "Harex Infotech Inc." developed the ZOOP service [3], which provides the mobile payment of ATM, gasoline station and restaurant in Sungnam City with LG Telecom and National Card. A ZOOP service provides the credit payment by IrFM communication of cellular phone. The dongle adapter developed for the existing POS is shown in Figure 4. Besides these services, the IrFM system equipped in the subway and highway road are shown in Figures 5 and 6.

Fig.4 IrDA dongle attached to the existing POS

Fig.5 Subway gate by IrFM

The IrDA is very safety because the electro magnetic wave is not used and the light output power is very small. It can be used in the hospitals and airports because of no interference with the electro magnetic wave. Furthermore, because the communication area of IrDA is limited in a small range of 1 m and the beam is very sharp. So, the other users cannot monitor or invade. Therefore, IrFM is considered to be appropriate for the proximity e-Commerce and m-Commerce.

Fig.6 Mobile payment at the highway road

4. Other Technology Trend of IrDA

The current maximum speed of IrDA is 16 Mbps. But more high speed and high efficiency of the IrDA protocol transmission are the current topics in the IrDA meeting owing to the wide spread of the broadband Internet. For Ultra Fast Infrared (UFIR), the targeted speed is 100 Mbps, which is the same as Fast Ethrernet and IEEE1394, the special interest group was setup in the IrDA meeting and the discussion has been started for specifications. Furthermore, IrBurst protocol, which can transmit the real-time stream signal and is able to transmit the signal more effectively over the IrDA protocol, has been discussed and the details of this protocol have been focused on the primitives.

5. Summary

Korea is the most developing country of IrFM in the world and IrFM services are introduced in the various commercial services. On the other hand, the IC card or wireless card is very popular in Japan. But, in the near future the IrFM system will be wide spread. The KDDI Corporation, contracted with JCB, Toyota Finance Corporation, Mitsui Sumitomo VISA Card Corporation and UC Card Corporation, started the trial of Kei-Credit Service [4]. It uses the IrFM protocol by the next generation cellular phone "cdma2000 1X". Also, the new student cards are considered to be introduced in Waseda University. There are already more than 80 million cellular phones in Japan. As the "D504i" cellular phone of NTT DoCoMo has the IrDA port, most of the Japanese cellular phone will be able to be paid by the IrFM protocol in the near future..

6. References

[1] http://www.irda.org/, Web site of IrDA.
[2] IrDA Specifications, Infrared Financial Messaging Point & Pay Profile.
[3] http://www.mzoop.com/, Web site of Harex Infotech Inc
[4] http://www.visa.co.jp/newsroom/jp_180402.shtml, Web site of VISA International

"ECOmmunication" – Supporting Communities of the Future

Tohru Kishimoto
NTT Energy and Environment Systems Laboratories

1. Introduction

In recent years, a major change has begun in various regions throughout Japan—the shift from ideas being generated outside the community with an emphasis on fixed approaches to activities based on original regional strategies that focus on flexible ideas generated within the community. This shift represents one element of a trend toward aiming for future development that makes effective use of the region's resources, and that emphasizes the region's unique characteristics. At the root of this trend lies a movement targeting the formation of a consensus among citizens, government, industry, and the region with regard to the form that society (the Community) should take, and targeting the creation of a community that can successfully achieve this goal. In this paper, we will present an overview of "ECOmmunication s"—communications among the private sector, industry, and government that make use of upcoming new mechanisms which will support regional communities; specifically, the IT-based information transmission and sharing mechanisms that transcend the boundaries of space and time.

2. What is "ECOmmunication s"?

In the Basic Environmental Plan, the term "Environmental Communication" is used to express the following meaning: "As opposed to unilaterally providing information related to environment impact and environment protection activities, Environmental Communication involves listening to the opinions of interested parties and encouraging debate among these parties, thus deepening mutual understanding and acceptance of all points of view, in order to establish partnerships among the main players—including individuals, government, corporations, and private NPOs—on the way to building a sustainable society."

In other words, the key to Environmental Communication is to have the interested parties establish a mutual partnership, to conduct debates and exchanges of information based on the information required to accomplish this, and encouraging mutual understanding and acceptance.

We have focused our attention particularly on this interactive aspect of environmental communications, with a view toward gathering, transmitting, and sharing a wide range of information from all levels of society. We believe that in this way, by encouraging discussions throughout the regional community—not only with the government, but among people involved in the field of ecology, including companies as well as citizens' groups and other NPOs—it will become possible share a much larger perspective. Information technology will be an important tool in accomplishing this goal—a tool that we refer to as "ECOmmunication." As shown in Figure 1, ECOmmunication could be considered the central gear that connects the various elements that make up regional communities of the future.

3. ECOmmunication applications

Figure 2 shows an outline of the "Environmental community-building process," as well as some of the issues involved in carrying out this process. In recent years, there has been an increase in activities targeting the use of IT as a means of sharing information. This is particularly true in terms of gaining an understanding

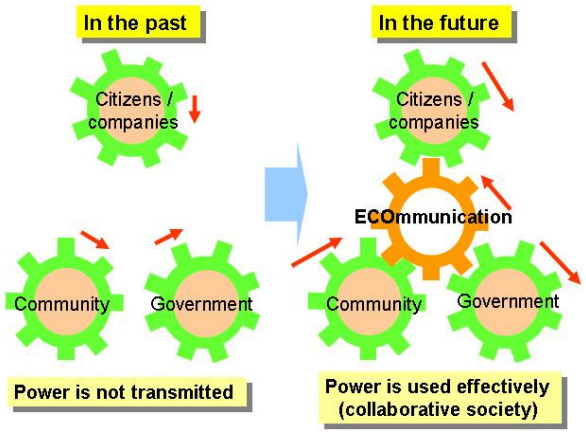


Figure 1: Regional Communities of the Future (Eco-communities)

of current situations, where IT has become an effective tool for organizing information—a process that in the past required countless man-hours to carry out. The fact remains, however, that IT has only been used to a very limited degree in processes beyond the organization of information. In recent years, an increasing number of municipal governments have been using "electronic conference rooms" to conduct debates, but as it stands, the common view is that even using current information technologies, establishing a consensus as required in face-to-face debates presents numerous difficulties. Lately, however, with a growing demand for response to lifestyle-related environmental problems (as opposed to pollution-related environmental problems, as in the past), issues have become extremely complex, and it is essential to use information technologies in each process in order to unravel the many interrelationships involved. This has led to a trend toward applications of the appropriate lifestyle environment information required at each stage.

Figure 3 illustrates the IT tools required to effectively use lifestyle environment information in

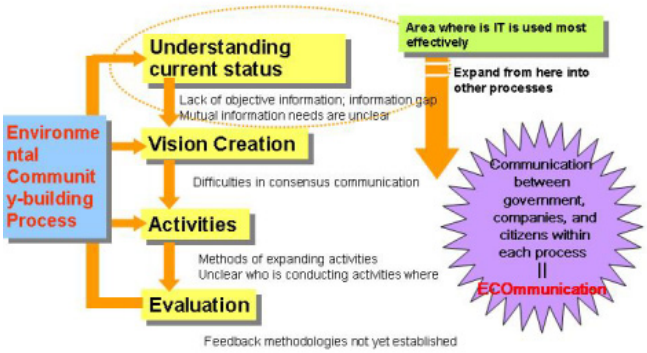


Figure 2: Processes and issues in the case of Environmental Community-building

each of these processes. At present, these tools are mainly being used in gaining an understanding of current situations, and in some cases, providing support for related activities.

Meanwhile, there has been almost no visible effort to utilize IT in the processes of vision creation and evaluation. As indicated by the items in red in Figure 3, some of the elements that will be required in the future are: environmental predictions (a type of simulation tool) conducted by citizens; environmental evaluations using easy-to-understand environmental indexes, using lifestyle environmental information gathered by citizens; tools for measuring the effects of activities; and support for mutual interactions designed to promote links between individuals to facilitate the execution of various activities. In the future, through societal tests, we will verify the effectiveness of these tools, and continue our efforts to achieve an "eco-

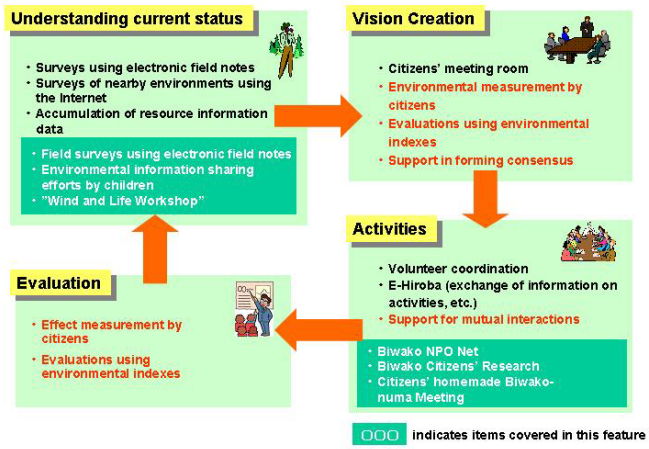


Figure 3: IT supporting communities of the future

community" that will provide support for regional communities.

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

☐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……..…….. \ _____

Additional Transaction (optional)……..\ ☐SAL mail……\ _____

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

From Editor's Room

This June I participated in a celebration party for my benefactor, who is very active in Boy Scouts activities and was given an award by the Emperor this Spring. In the celebration party, they described the thoughts of Mr. Shinpei Goto, the first president of the Boys Scout Association of Japan. The original Japanese is shown in Fig. 1, and an English translation is shown in Fig. 2.

人のおせわにならぬよう

人のおせわをするよう

そしてむくいを求めぬよう

Figure 1

Do not expect or depend on support from others in your own tasks,

Voluntarily help others at your own initiative,

And never look for a reward.

Figure 2

Since we are now starting the second year of the IEICE Global News Letter, I hope that these thoughts can guide us in activities related to academia. Please look forward to the next issue.

IEICE Global News Letter Editorial Staff

Editorial Staffs of this issue

No special order is observed.

Hiroshi TOMONAGA
Fujitsu Laboratory
Kiyoshi UEDA
NTT
Takumi WATANABE
NTT
Hiroshi YAMANE
NTT

Hirohito SUDA
NTT DoCoMo
Wireless Laboratories
Director, Newsletter Publications, IEICE Communications Society

Katsunori YAMAOKA
Tokyo Institute of Technology
Global Scientific Information and Computing Center
Director, Newsletter Publications, IEICE Communications Society

Call For Papers

Special Issue on Recent Fundamental Technologies for Broadband Satellite Communications

The IEICE Transactions on Communications announces a forthcoming special issue on Recent Fundamental Technologies for Broadband Satellite Communications to be published in **August 2004**. The satellite communication has been playing an important role in the broadcasting, fixed communications especially in rural area, and mobile communications for aircrafts and vessels. Besides, the satellite communication is further expected to provide more economical and broadband services worldwide in correspondence to recent terrestrial networks. This goal cannot be achieved by a few technologies. In order to achieve the goal, various fundamental technologies are deemed necessary from lower layer to higher one. This special issue focuses on the recent fundamental technologies, which will contribute to providing broadband satellite services both in communications and in broadcasting.

1. Scope

Suggested topics include but not limited to the following:

(1) Broadband / Mobile transmission technologies for satellite communications
Multilevel Modulation, High Efficient FEC, ARQ, Packet Transmission, Transmission Power Control

(2) Satellite IP / Network technologies
Satellite IP Protocols, Evaluations of Satellite IP Networks, Mobility Management, Routing Protocol, QoS Control, Security for Satellite Communications

(3) Satellite Devices
Satellite Terminal, Satellite Antennas, Transponder Technologies

(4) Satellite Communication Service Technologies
Emergency Communications, High Data Rate Packet Services

(5) Satellite Communication System Technologies
Quasi-Zenith Satellite Systems, Low Earth Orbit Satellite Systems

(6) Satellite Communication Application Technologies
Satellite Multi-cast, Satellite Broadcast, Satellite VoD

2. Submission Instructions

Submitted papers will be reviewed by referees in accordance with the regular rules of the Transactions Editorial Committee. The standard number of pages is 8 for a paper, and 2 for a letter. Refer to “Information for Authors" at the following web site for more details; http://www.ieice.org/eng/shiori/mokuji.html. Prospective authors are requested to e-mail an electric version of an original manuscript in PDF format to the address below. The authors are also requested to attach a text file containing the title, author name(s), abstract of the paper and the postal address, the contact person’s name, telephone number, fax number and the e-mail address of the corresponding author.

Toshinori Suzuki
KDDI R&D Labs. YRP Research Center
YRP Center No.3 Bldg., Hikarinooka 7-1, Yokosuka
Kanagawa, 239-0847, Japan
Tel: +81-46-847-6350, Fax: +81-46-847-0947
E-mail; tn-suzuki@kddilabs.jp

3. Paper Submission Deadline

Papers must be received by **November 22nd, 2003**.

4. Special Issue Editorial Committee

Editor-in-Chief	Takeshi Mizuike (KDDI R&D Labs.)
Secretaries	Jin Mitsugi (NTT), Toshinori Suzuki (KDDI R&D Labs.)
Guest Editors	Ikuo Oka (Osaka City Univ.), Nei Kato (Tohoku Univ.), Makoto Kawai (Ritsumeikan Univ.), Hideo Kobayashi (Mie Univ.), Jyunichi Takada (Tokyo Insti. of Tech.), Masato Tanaka (CRL), Toshihiro Nomoto (NHK), Takaya Yamazato (Nagoya Univ.)

5. Note

1) This special issue is planed in relation to JC-SAT2003, which is an international joint conference held by Korean and Japanese societies, with regard to satellite communications. The authors of JC-SAT2003 are encouraged to resubmit their papers to this special issue, but the authors are not limited to the conference.
2) A period allowed for revision may be shortened after the 1st reviews.
3) If there are more selected papers than the original plan, some papers may be published as regular papers.