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My Experiences as a Network Architect

Shigeo Urushidani
National Institute of Informatics

1. Introduction

I am greatly honored to have been awarded the IEICE Fellow for contributions to research and development of multi-layer network control technologies. I have been working as not only a researcher but also a network architect for large-scale telecommunication networks for many years. Since I presume that most readers are unfamiliar with the work of network architects, I would like to explain what kind of work I have done and am doing in this article. The following sections describe my work in chronological order.

2. Enjoying Research on System Architecture

I joined NTT Laboratories more than 30 years ago and was first engaged in the research and development of switching systems for broadband ISDNs. After I learned the detailed functions of existing switching systems, such as those for telephone networks and ISDNs, I started researching switching fabric architecture for asynchronous transfer mode (ATM) switching networks. My specialty was self-routing switches, which are composed of many switching elements and use special headers for routing among them. I pursued ultra-high-speed, high-performance, and scalable switches. From that time on, "ultra-high-speed, high-performance, and scalable" have been the main themes in my research, even though my research target changed from switches to systems and networks.

I developed a new switch architecture, called a rerouting switch, which uses unique headers and special interconnection patterns among switching elements, and published the research results in international journals [1]. As switching fabrics were the core parts of switching systems, I also could grasp the whole system structure through collaboration with researchers of other system parts. When I was trying to write other journal papers, I heard from my boss that a personnel change would soon see me moved to NTT headquarters. As a loyal employee, I reluctantly went where I was told to go.

3. Struggling with Network Architecture

In the personnel change, I was sent to the department that plans strategies for enhancing existing networks and launching new networks. At that time, network planning was strongly related to NTT's business strategies. My job was to oversee network architecture development. Because my position covered a range of network services, I needed to learn about many existing networks, such as a digital telephone network, ISDN, common channel signaling network, packet switching network, new position system network, and intelligent networks for free dial and other value-added services. I also learned about the related testing, monitoring, and operating systems. From studying these networks, I came to understand that designing network architecture means assigning network functions to related systems, such as switching systems, network control systems, and external boxes. I had many discussions with other departments in order to implement and deploy new network functions.

The fashionable architecture at that time was the division between transfer and control layers for quick service provision and flexible traffic distribution. I think that this concept is similar to that of current software-defined networking (SDN), although their technologies are very different. Network architectures are usually related to newly designed network systems, but I once developed a completely new (but vague) network architecture that flexibly collaborates with user terminals and servers to provide new services. I did not know why but this architecture was highly valued by our president. I even wrote an oral document for the president to explain the idea to a politician who later became the prime minister of Japan. I learned from this experience that the vaguer the concept, the keener the executives are about it.

4. Design of Real Networks

After the above-mentioned work, I returned to NTT Laboratories and was engaged in introducing newly developed network systems into real fields. To introduce new systems successfully into a network, we also need to be involved in designing the network. First, I strained to understand all system functions, then proposed a rough network architecture, and became involved in the detailed network design. I was very nervous about designing the first network, even though it was a relatively small, because I had to decide all the detailed system parameters. This network was successfully launched on schedule, but some user applications did not work at the beginning. I was very tense until the day before the launch ceremony of the network using these applications, but I overcame my worries. After that, I was involved in designing increasingly large networks, including large-scale commercial networks. These experiences taught me that a network architect needs to carefully determine if new network functions can work stably or not in real environments, although frankly I sometimes had to decide functions intuitively.

5. Research on Multi-Layer Service Networks

After becoming a research group leader, I was engaged in research and development of future networks that integrate the existing service networks and provide each service network as a virtual service network. We aimed at a network architecture that comprises optical core systems and hybrid (optical and packet) edge systems to provide a variety of multilayer services. For flexible routing, we also developed and implemented new protocols on the basis of multi-protocol label switching (MPLS) technologies, such as multicast MPLS and generalized MPLS, and developed new controllers, such as a path computation element (PCE). We also tried to develop an open router architecture on the basis of an advanced telecom computing architecture (ATCA). Although these challenges did not strongly affect the real world in the end, they gave us a good opportunity to freely reconsider the network and system architecture. After these developments, I moved to NII for various reasons. Some of my colleagues on the other hand were involved in the NGNs that were very important in the NTT group but controversial in academia.

6. Research and Development of Multi-Layer and Multi-Service Networks

I moved to NII in 2006, where I have been involved in the research and development on multi-layer and multi-service networks and the design of the Science Information Network (SINET). I realized at first that the features of SINET are very different from those of commercial networks in which I had been involved because service requirements, such as bandwidth, type of services, and flexibility, are quite different. Thus, I needed to consider unique architectures to meet the requirements. Note that I am happy that SINET has many users and they give us good ideas for new network services. Considering service specifications, such as multi-layer virtual private network (VPN) services and on-demand services, my colleagues and I in NII decided to change network architecture as well as system architecture [3]. For example, we introduced logical routers to accommodate a variety of multi-layer network services. Although the vendor engineers first opposed using logical routers widely for stable operation, we decided to deploy them after carefully checking the test results in our experimental environment. As for on-demand services, which dynamically provide users with bandwidth or VPN, we developed our own on-demand controller to control the transfer systems. In contrast to logical routers, many people were quite enthusiastic about on-demand functions being introduced into SINET already in operation, and luckily no trouble occurred.

New SINET5, which covers all Japanese prefectures with 100 Gbps or more bandwidth and provides all users with a high-performance and reliable platform, started full-scale operation in April, 2016 [4]. When I proposed this plan, everyone laughed and said, "It would be terrific if it were a real plan". To be honest, I thought so too at that time. But my colleagues and I struggled against telecom carriers and vendors in order to make this plan a real one, and eventually we did. About 50 engineers were involved in designing and constructing SINET5. My main task in the design phase was to write the basic design document, which exceeded 500 pages, for sharing ideas among the engineers. I think that SINET has an ideal network size to design by using new technologies.

7. Other Messages from My Experiences

I would like to leave two other messages to young readers. One is that you should publish research results as quickly and widely as possible. I have bitter memories of not doing so. I submitted my ideas to an international conference, called ISS'90, for which people from 11 countries reviewed my paper, and then published half the contents due to space limitations. I was then moved to NTT headquarters. About four years later, I realized that the other half of the contents had been published as it was by other researchers. If interested, you can easily identify the paper by referring to my US patent [2]. I regret my careless approach to international activities. The other message is that you should get along with supervisors even if they are quite strange. I have worked with some odd supervisors over the years. I will not go into details, but my colleagues and I suffered from their weird behavior. Although I am not a Christian, the following message from the Bible might save you in the near future: "we also rejoice in our sufferings, knowing that suffering works perseverance; and perseverance, proven character; and proven character, hope (Romans 5:3-4)." This message certainly saved us.

8. Conclusion

This article described my experiences as a network architect as well as a researcher. Although I became a network architect through a personnel change rather than a personal decision, I am satisfied with my position. Finally, I would like to express my sincere appreciation to the IEICE, which always gives me opportunities to present my ideas to and discuss them with many researchers.

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A Sketch of My Research and Lifestyle in Japan

Yuncheng Zhu
Hitachi, Ltd.

1. Introduction

I am really honored to have this opportunity to share some of my experience in Japan as a foreign member of IEICE. This article briefly covers my Ph.D. candidate life in the University of Tokyo and my research and private life in my current occupation.

Before I came to Japan, I received my bachelor degree and master degree from Tsinghua University, China. By that time, I had travelled to Australia and USA to present my papers in conferences, and had worked for about half a year in Microsoft Research Asia (MSRA) as an intern. Although I had been acquainted with such international communities, Japan was still a mysterious place to me at that time.

2. To Pursue the Ph.D. Degree

I came to Japan in 2009. Unlike most of the people who enter graduate school in Japan directly, I joined a laboratory of National Institute of Information and Communications Technology (NICT) and worked there during my first year in Japan. I could read some simple Japanese, but was not able to listen to, speak or write any at all at that time. Prof. Akihiro Nakao, a professor of the University of Tokyo, is the project leader of the network virtualization laboratory where I worked. Prof. Nakao speaks very fluent English and thanks to him, I conducted my research in English quite smoothly and achieved to publish my first paper about information-centric networks in a workshop of IEEE INFOCOM [1].

Prof. Nakao not only managed my research, but also encouraged me to think of my career. At the same time, NICT provided a good platform to get to know people from different academics and industries in Japan. Finally, I decided to enter the University of Tokyo to pursue the Ph.D. degree, because I chose to explore my career path of network research in Japan but it is not easy to do so without a degree acquired in Japan.

I continued my research in the field of information-centric networks in my Ph.D. study in Graduate School of Interdisciplinary Information Studies, the University of Tokyo under Prof. Nakao. My research mainly focused on the deployability and scalability of the information-centric networks, and proposed some key components such as transport protocol [2] and distributed resolution service [3]. With the key components available, I was able to bring together my Ph.D. thesis theme, A Deployable and Scalable Information-Centric Network Architecture (DSINA) [4]. One of the key achievements of DSINA is that it solved the problem that recent content-oriented

network research failed to address the critical importance of an information-centric network architecture providing the availability of clients accessing services with user-generated content as well as accessing published content from the Internet services (which is, in fact, the most popular traffic pattern of the emerging Internet-of-Things today). DSINA incorporates route-by-name system into the current Internet infrastructure. As shown in Fig. 1, DSINA can handle not only content retrieval, but also other applications including user-generated content uploading and notification pushing, with the register-access-result model.
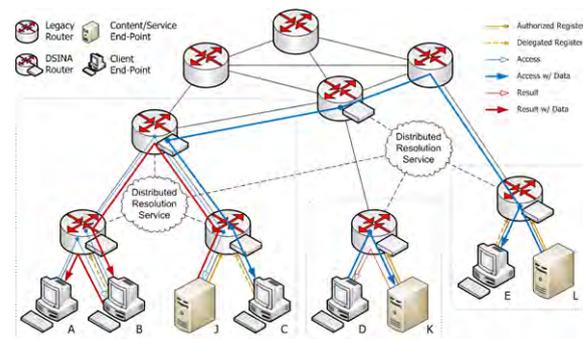
Fig. 1   The overview of DSINA

Besides Prof. Nakao, staffs and students of his laboratory, and other professors of the graduate school, Center for Japanese Language Education of the university also affected me a lot. The center provides an opportunity to learn Japanese for international students and foreign researchers. The courses cover not only words, grammars and conversations, but also how Japanese comprehends one's words or texts. Although I used English all the time for my research during the study, the courses largely helped me to use Japanese in the other parts of my daily life. The course also provided space for international students from different countries to exchange our experience and ideas.

3. R&D as a Job

Influenced by Prof. Nakao's regarding implementation as important, after graduated from the University of Tokyo, I joined Central Research Laboratory, Hitachi, Ltd. (currently Center for Technology Innovation – Information and Telecommunications, Research & Development Group, Hitachi, Ltd.) because I think that R&D as a job in the industry is closer to the applications compared to the universities and national institutes.

Although my R&D in the company still primarily concerns network optimization, operation and management, the target network architecture shifted from information-centric networks to mobile networks. Mobile networks were completely new to me, but my mentor and colleagues helped me to learn the Long-Term Evolution (LTE) thoroughly. Through studying the 3GPP standards on C-Plane procedures of LTE, I proposed a novel mechanism to locate the cause of QoS performance decline in Evolved Packet Core (EPC), including the Processing Step Failure Rate (PSFR) inference algorithm and the Decline Cause Locating (DCL) algorithm [5]. After extending my horizon to Internet-of-Things, I further propose a practical approach for network fault detection, namely Unbalanced Variation Detection. UVD automatically extracts the unbalanced variation among measured indexes without the necessity of recognizing the physical meaning of them, which is applicable for the majority of measured indexes in the commercial networks, because of its efficiency and scalability in performance, and its acceptable detection accuracy [6].

Actually, R&D in industry is well balanced between the academic value and the contribution to the business. In my company, researchers are encouraged to increase not only one's output to the business, such as patents, but also one's technical strength, such as technical presentations and papers. I believe that my dream, enriching people's life with advanced solutions including my inventions, will come true in such R&D environment. Moreover, we take an active part in Japanese academic communities. For example, I currently serve as a publication co-chair of APNOMS 2016, an international conference in network operations and management sponsored by IEICE Technical Committee on Information and Communication Management (ICM).

4. Time Off and Holidays

Japanese companies are famous for their long overtime hours. Although this is still the current status, most of the companies, including mine, are taking effort to improve the work-life balance of their employees. My department is a good example of promoting good work-life balance, which holds various recreation events after work hour. One of the most unforgettable events is the night cruise in Yokohama Bay, when we had two-hour's delicious food and wine, night view from the cruise ship, and plenty of talk and laugh. A picture of the cruise ship is shown in Fig. 2.

One of my favorite ways to spend the holidays is to go to skiing in winter. Thanks to the convenient transport infrastructure of Japan, one can reach the ski resorts, in less than two hours by Shinkansen. I love skiing because it is a mix of enjoying the beautiful nature, taking exercise to be healthier physically and relieving stress to be healthier mentally. The scenery from the snow mountain is always beautiful and the view changes as I move forward on my ski. A nice shot from Mt. Myoko is shown in Fig. 3. Of course, I will never forget to enjoy the tasty Japanese Sake after a

Fig. 2   The cruise ship sailing off the pier

Fig. 3   The view from Mt. Myoko

whole day of skiing because many areas of ski resorts are also famous for Sake production.

5. In the End

In one word, Japan provides good opportunity and environment to conduct my research in networking and to live happily. I would like to express my sincerely thanks to all the people who help me in my life in Japan. It would be my pleasure if this helps someone to know how foreign members think of research and private life in Japan, or is useful when someone considers studying and/or working in Japan.

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Study in Japan: Experiencing the True Meaning of "Think Global Act Local"

Ilmiawan Shubhi
Graduate School of Informatics, Kyoto University

1. Introduction

First used in the context of environmental challenges, the phrase 'Think global act local' has now taken on a wider meaning. Worldwide customer-based companies for example, have to run lean supply chain, and keep their operation as simple and standardised as possible so that they can achieve optimum efficiency. To achieve this goal, therefore, they need to think globally. At the same time, however, those companies should also consider customer's specific-local tastes and preferences. Without understanding the customer's perspective, those companies will have no market and thus, no business. This example shows the importance of "Think global act local" in the real life. The importance, is in certain, also includes the academia world.

2. My Research in Japan

My first arrival in Japan was about four years ago when I started my master study at the Department of Electronics and Electrical Engineering, Keio University. Currently, I am with the Department of Communications and Computer Engineering, Graduate School of Informatics, Kyoto University as a Ph.D. student since October 2014. Have been studying in Kyoto for two years, I am now entering the last year of my Ph.D. study.

Both in my master and Ph.D. study, my research is in the area of wireless communications. In our laboratory, we develop several techniques to improve the performance of wireless communications especially by implementing the multiple antenna systems. In the wireless communications area, such systems are well known as the multiple-input multiple-output (MIMO) systems. Through implementing MIMO systems, the data throughput of the systems can significantly increases without any additional bandwidth. One major challenge in the MIMO systems, however, is the limitation of the number of antennas at the mobile station (MS) due to the size limitation. This limitation causes the advantages of the MIMO systems can not be fully exploited using the conventional techniques.

In my master study, we proposed a method to improve the performance of MIMO systems by using a novel decoding technique at the MS. While in my Ph.D. study, we conduct an experimental study to observe the possibility of implementing the MSs collaboration approach to improve the quality of the decoder input. Both approaches, in certain, increase the computational
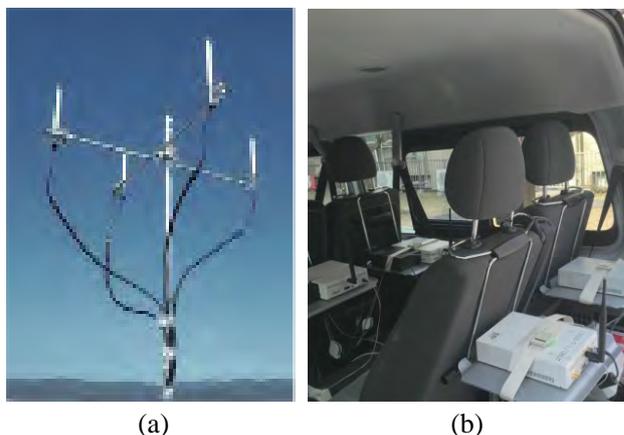
Fig. 1   Our field experiment in Kyoto University. (a) Four antennas at the BS are used for transmission. (b) Several equipments are installed in a moving car to simulate the MS collaboration.

and or transmission complexity. By the stronger signal processing technology, however, this additional complexity is not significant compared to the advantages that can be obtained through implementing these approaches.

3. Study in Japan, See Through Different Perspectives

Through my four years of study in Japan, I gain a lot of new knowledge in the area of wireless communications under a great guidance from Prof. Sanada of Keio Univerity and Prof. Murata of Kyoto University. I also start to understand how the process of a research is conducted, and write the results properly as a journal paper. Live and study in Japan, however, is not only about gaining knowledge on the technical area. Instead, study in Japan also gives me a lot of experiences which improve me as a personal.

I remember the time when I was still in Indonesia. At that time, I always complained about the quality of internet connection there, especially for the wireless service case. The connection was so bad that even a common newspaper website often could not be accessed. I always wondered why our country could not get a better quality of connection. Compared to the service quality owned by other countries, we were so lack behind. Every new technologies can not be adopted fast to meet the customer demands. In that time, I could only blame others, without doing something, or at least, trying to understand the root

problem.

Now, after going through my four years in Japan, I understand that bringing a great mobile communication service to the customers is not an easy task. A lot of researchers need to sacrifice their time and effort to invent new systems with continuous improvement. This effort is even given without any guarantee that their techniques will be implemented. As we can see in the IEEE digital library for example, more than four million high-quality papers are registered with only several of them are implemented to the market. Nevertheless, researchers still commit and tirelessly seek a state of the art finding in their laboratories.

Later, I realize that researches are not only about implementing our invented technique to the actual market. Active researches are also important to build a positive research environment which could trigger out of the box ideas and enable the researchers to discuss and share their ideas. This positive environment will ensure that the implemented technologies are indeed, the optimum possible technologies at that time. In addition, these research environments will also insure that there will be sufficient number of qualified individuals so that the agreed technologies can be shortly adopted and brought to the customers.

4. "Think Global"

Thanks to the opportunities of having master and Phdresearch at Japan, now I realize that the phrase "Think global, act local" is indeed, important and need to be deeply understood. Think global should not only be interpreted as what is happening in and owned by the global society outside our country. In contrast, we should also solidly think about how they can grasp that achievement.

A simple but yet important practice in the most of Japanese laboratory is the weekly meeting. Here, all of the laboratory members gather to show the progress on their research. This weekly meeting actually shows how the continuous determination, focus, and discipline are required in the research. Through the meeting, we can also share our knowledge to our laboratory members. It is unsurprisingly that several ideas of my researches come from this weekly meeting.

Another useful practice which I firstly saw after I arrived in Japan is the regular technical meeting which is attended by academias and industry practitioners. This technical meeting enlarge the knowledge sharing into a wider area. This meeting also enable academias and industry practitioners to understand the needs of each party. By attending several of these technical meeting, I have been convinced that academias and industry can not work separately. Instead, they need to work closely to effectively achieve their goals.

Another blessings that I obtained during my research in Japan is the encouragement from my professors to attend the international conferences. By attending these conferences, I am able to learn a lot of how researchers around the world work simultaneously to achieve our common goals. I also could briefly learn the socio

Fig. 2   My trip to Hiroshima

cultures in the different parts of the world. These conferences also enable me to create a small, yet global network which I believe will be useful throughout my long journey of research.

5. Act Locals

As mentioned before, we need more than "think global" to be successful. Instead, we also need to learn how to adaptively put our research or habit so that it can easily be accepted by the local perspective. In Japan for example, you need to be strictly punctual and discipline. You also need to learn how to properly communicate and discuss with your supervisors. Have been residing in Japan for four years, I successfully adopt the Japanese way in several items. Having a carefully-planned trip for example, is far beyond my imagination prior to my arrival in Japan. However, it is now become quite common in my life, just like I did during my trip to Hiroshima a last August.

In addition to above, "act local" could also have a more important meaning for a person, especially academia. The phrase "act local" implicitly contains an enforcement to continuously improve as a personal. In facing obstacles, for example, we could not wait for the environments to adapt to our requirement and point of view. The best course to achieve any change and improvement is to drive change ourselves. In my case, rather than blaming others for having insufficient wireless connection, I want to actively involve in research community in seeking ways of enhancing the mobile communication services.

6. Closing Remarks

At the end of this article, I would like to thank to the editor for giving me this chance. I am also grateful that IEICE is continuously pushing to publish English version of global newsletter. I believe, this is also a good example of the spirit of "think global". I am sure that it will bring Japan and the world get closer and could achieve our shared objectives.

Towards a Software-Defined World

Wenyu Shen
NTT Communications

1. Introduction

My journey in Japan started on 19th May, 2007; this was also the day when I started my career in Japan, and actually for my life. To begin with, I would like to thank the editors who gave me the opportunities to publish this paper. The 10-year time was long and it indeed changed my whole life, so I hope the readers can gain from this paper, which summarizes this 10-year career life, and conveys my advices to the people who will start their career in Japan from now on. In fact, the 10 years were all about my efforts to realize a software-defined world.

2. Work in NTT Communications

I joined NTT Communications in 2014, and now I am leading a team which is in charge of the Software-Defined Wide Area Network (SD-WAN) technology development in the company.

The SD-WAN technology [1], known as one of the hottest topics in the telecommunication industry nowadays, is dramatically changing the way which enterprises design and operate their WANs. At first, in the context of SD-WAN, overlay tunnels such as IPsec tunnels are established in order to connect branches, and moreover, centralized network control and management is enabled as well. No longer relying on the operation of underlay carriers' networks, enterprise users now become able to totally take control of their WANs on the fly, easily introducing new branches and applying new policies, etc. Next, with the improvement on the quality of the Internet, enterprise WANs are now moving from Multi-Protocol Label Switch (MPLS) networks to the Internet, which potentially saves the network cost to a large extent; hybrid WAN (one Internet access with one MPLS access) or even dual Internet accesses have gradually become the de fact architecture for enterprise WANs.

Conform to this boom, the responsibility of my team is to develop a SD-WAN testbed as shown in Fig. 1, where we test latest vendor solutions, integrate them to our existing system, and evaluate new use cases. Up to now, 4 vendor solutions have been on-boarded and evaluations have been carefully conducted, so a comparison can be easily presented. In addition, in order to enable smooth migration, we deployed SD-WAN virtual Customer Premises Equipment (CPE) to enable different cloud connections, such as our Enterprise Cloud (ECL) [2], and SD-WAN gateway to inter-connect our Arcstar Universal One Virtual Private Networks (VPNs) [3]. Moreover, many innovative use cases brought by the SD-WAN technology were born
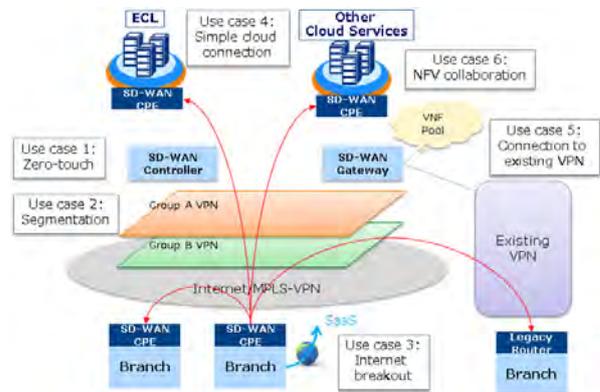
Fig. 1   SD-WAN testbed architecture

and evaluated in this testbed such as segmentation, Internet breakout, zero-touch provisioning.

The importance of this testbed is tremendous. We are conducting trials with the customers in order to seek potential business opportunities, while we are collecting practical needs for further improvement of the testbed. Our customers are satisfied with this activity, because it can provide them with enough information before they make a final product selection. As a result, although in a research and development division, I have obtained many opportunities to visit the customers to transfer new technologies, perform demonstrations, and listen to their requirements; these have brought me a priceless fortune. On the other side, we are closely collaborating with several vendors in parallel, learning new knowledges and providing user feedbacks. The testbed finally has become a knowledge pool, filled with the latest technology updates and actual requirements, and it has reversely greatly promoted product improvement. I think I am lucky, because I can stand at the frontier of the technology innovation, acting as a hub linking the technology to commercialization.

3. Work in NTT Laboratories

Before I joined NTT Communications, I was with NTT Network Innovation Laboratories from 2008 to 2014. NTT Laboratories were where I started my career. In NTT Communications, I am working as an engineer, or a project manager, while in NTT Laboratories, I was a researcher. The life in the laboratories was a little different. My job was to create new concepts, perform evaluations, and implement prototypes. At the same time, I submit papers and made presentation in a variety of conferences. What was not changed was that I was always in the exploring journey towards the software-
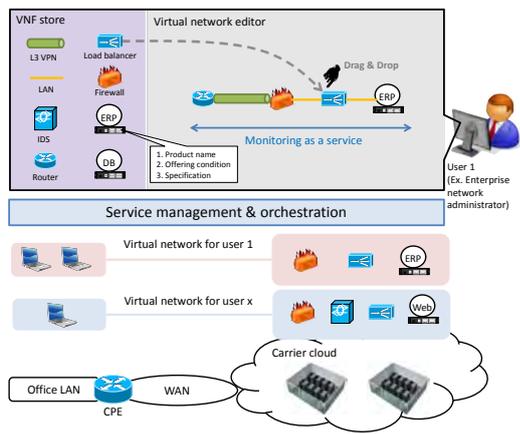
Fig. 2   VNIaaS concepts

defined world and the starting point was indeed from NTT Laboratories.

Following the technology trend, my research topic started from network virtualization, and then moved to software-defined networking (SDN), and finally network functions virtualization (NFV). [4-6] reflect my efforts; actually they also reflect the technology transition in the related area. [4] proposed a management engine which was mainly designed for SDN-enabled networks, while [5] proposed a role model for modeling virtualized networks. I would like to spend more efforts on [5]; the result was published in IEEE Communications Magazine and this research also helped me win the IEICE young research award.

NFV was regarded as a promising candidate for Future Networks. Although many advantages were expected, there was still a lack of services that directly linked to increased revenue for telecom operators. Therefore, in this research, I proposed a new NFV-based service, virtual network integration as a service (VNIaaS), mainly positioned to serve enterprise users; Fig. 2 illustrates the VNIaaS concepts. VNIaaS provides a portal site in which a network administrator constructs a virtual enterprise network on the fly by utilizing a virtualized network function (VNF) store and a graphical user interface (GUI) based virtual network editor. In fact, VNIaaS provides one-stop integration of cloud and networking services so that all related provisioning tasks are handled automatically. In order to realize the concept, I further proposed and implemented a prototype system named vConductor, in which I simplified and normalized the provisioning procedure for virtualized networks, proposed a multi-objective resource-scheduling algorithm for optimizing individual business needs, and enhanced the inventory management by extending the TM Forum Information Framework (SID).

4. Internship in NTT Laboratories

Many people asked me what motives induced me to come and work in Japan. Frankly speaking, my career in Japan indeed began by coincidence. Initially I came to Japan for an internship program organized by Japan External Trade Organization (JETRO) in 2007. Unlike many foreign members who learned Japanese in language schools, after which they pursued the Master or Doctor

degree in universities, I was initially with a company as an Intern and then became a full-time employee directly. Luckily, the result confirmed that my choice at that time was correct.

5. Advices

The 10-year time was long, with a lot of happiness and sadness, success and failure. In this paper, I would like to summarize all these experiences into the following 2 advices and share with the foreign members.

1) When in Rome do as the Romans do.

Please try your best to get involved in the local society, which is more important then what you can achieve at the perspective of technologies. Language is always the first priority. Although English can be understood in most hi-tech companies, it is common that most Japanese are more comfortable to communicate in Japanese, especially in discussion with customers and partners. Since I didn't have any Japanese background before, the beginning turned out to be hard, but I didn't give up any opportunities to practice via such as emails, reports, discussions; these efforts have potentially assisted my research and development work. Similarly, try to understand the way that Japanese think, the cultures, and the customs.

2) Do what the Romans will not do as well.

In fact, to be a foreigner is your strength; don't forget this tool. Recently, many Japanese companies start to positively recruit foreign employees and expect occurrence of reforms. In my case, I tended to aggressively take challenges, daring to break a path unbeaten before. In addition, utilizing the language strength, I worked hard to be more active in the International collaboration and business affairs. Do what the Japanese will not do sometimes may win you unexpected opportunities.

Finally, I hope my experiences and advices can help your study and career in Japan. Wish you success!

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R&D Activities of EMC Technology Group in NTT

Farhan Mahmood
NTT Network Technology Laboratories

1. Introduction

NTT has been working on R&D of electromagnetic compatibility (EMC) technology, for protecting NTT's ICT facilities from EMC problems, and providing high quality ICT services. This paper introduces R&D activities of EMC technology group and author, and its future goal.

2. R&D Activities of EMC Technology Group in NTT

Figure 1 shows electromagnetic (EM) environment around NTT's ICT facilities. The ICT facilities are exposed to the EMC problems, which cause degradation of communication quality (CQ) of the ICT services. For solving the EMC issues, EMC technology group has been working on R&D to accomplish following three purposes;

1. Reducing EM interferences around ICT facilities.
2. Protecting the ICT facilities from leak of screen information through the EM-disturbance and from intentional EM interferences (IEMI).
3. Protecting the ICT facilities from lightning surge.

The EMC group reflects the R&D achievement to the international organization for standardization, such as International Telecommunication Union (ITU) and International Special Committee on Radio Interference (CISPR), for protecting the ICT facilities from the EMC problems.

3. R&D Activities of Author

Author has focused on EMC between the ICT equipment and power conversion equipment (PCE), such as rectifier, which is for providing electric power to the ICT equipment. Figure 2 shows usage example of the PCE in the ICT facilities. They are also known for generating the conducted EM-disturbance to broad band, during when internal inverters convert voltages [1], and it could cause the degradation of CQ of the ICT services, by being coupled the EM-disturbance to the ICT equipment thorough DC or AC power cables. Additionally, there is no regulation for measurement/ evaluation method and limit levels for the PCE below 150 kHz, even though the EM-disturbance levels of these frequencies have become larger, because of the development of large capacity PCE [2], and it could affect ICT equipment.

For clarifying and reducing the EM interference from the PCE to the ICT equipment, author has studied about reproducible measurement/evaluation method and limit levels for the conducted EM-disturbance in the frequency range from 2 kHz to 30 MHz [3-4].

The future goal of these R&D activities is that the measurement/evaluation method and limit levels in the
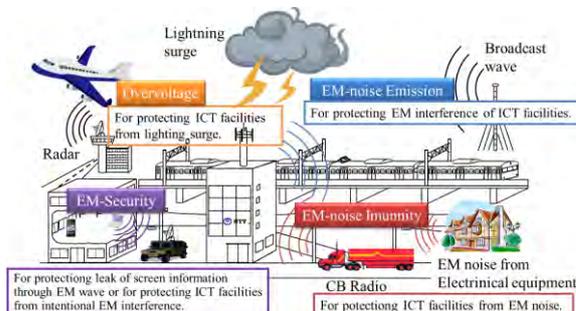
Fig. 1   EM environment around NTT's ICT facilities

Fig. 2   Usage example of PCE in NTT's ICT facilities

frequency range from 2 kHz to 30 MHz would be standardized, and commercial-release PCE would meet the requirement, which enable coexistence of the ICT equipment and the PCE.

4. Summary

This paper introduces the R&D activities of the EMC technology group and author, and its future goal, solving the EMC issues, such as EM interference from the PCE to the ICT equipment in the frequency range from 2 kHz to 30 MHz, and providing high quality ICT services.

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Report on Communications Society Special Talk and Awarding Ceremony at 2016 IEICE Society Conference

Fusao Nuno   Takuya Asaka

Director of General Affairs, IEICE Communications Society

1. Introduction

This article gives an overview of the Communications Society special talk and awarding ceremony at the 2016 IEICE Society Conference held at Hokkaido University, Sapporo, Japan, on 21 September 2016.

During the awarding ceremony, two awards were presented by Prof. Masayuki Murata, President of the Communications Society; the Outstanding Contributions Award and the Distinguished Contributions Award.

A special talk for this year was "*Developments of doctoral leader human resources that can support and drive the 21st Century Japanese society*" by Prof. Hiroshi Shimizu, Osaka University.

Fig. 1   Participants in the special talk and awarding ceremony at the 2016 IEICE Society Conference

2. Awarding Ceremony

The Outstanding Contribution Award was presented for the chairing technical committees and chief editor services on the Editorial Board of Transactions on Communications and Communications Society Magazine. Eighteen members were awarded for their services prior to 2016. The Distinguished Contribution Award was presented for extraordinary planning activities and voluntary paper reviewing in the

Communications Society. One hundred fifteen members were awarded for their contributions prior to 2016.

Fig. 2   Opening remarks by Prof. Masayuki Murata, President of the Communications Society

Fig. 3   Distinguished Contribution Award presented by President Masayuki Murata

3. Special Talk

A technical lecture was arranged for the special talk.

Fig. 4   Special talk by Prof. Hiroshi Shimizu,
Osaka University

Fig. 5   Closing remarks by Prof. Masahiro
Morikura, President-Elect of Communications
Society

The title of the special talk was "*Developments of doctoral leader human resources that can support and drive the 21st Century Japanese society*". Prof. Hiroshi Shimizu began his talk by addressing the present situation of developing human resources in the doctoral courses of universities and the problems encountered in Japan. After that, he introduced the trailblazing program of Osaka University, which develops human resources as leaders who are internationally competitive and can adapt themselves to environments that change dynamically. A key talent is the ability to solve recent complicated problems that involve several research fields. In this program, students develop the ability to resolve intricate problems that touch on multiple research fields by doing research work in research fields other than their main research field. By engaging in an internship and collaborative research, they also gain valuable experiences from studies in enterprise as well as academia.

In his talk, Prof. Shimizu also detailed the interim-achievements of this program, which has received the highest level evaluation from the Ministry of Education, Culture, Sports, Science and Technology, with a key result being a significant increase in the number of students taking a positive approach to study.

Prof. Shimizu concluded his talk by presenting the necessity of continuing the existing education programs. In particular, he insisted on the necessity of continuing programs in the field of communications, from which big developments are expected.

4. Conclusions

This article gave an overview of the Communications Society special talk and awarding ceremony. The Communications Society supports members' activities in the field of communications by giving contribution awards.

The ceremony was concluded with closing remarks by Prof. Masahiro Morikura, President-Elect of the Communications Society.

Report on ICM English Session at 2016 IEICE Society Conference

− BS-5, Network and Service Design, Control and Management −

Kazuhiko Kinoshita
Session Organizer, Tokushima University

1. Introduction

The 2016 IEICE Society Conference was held at Hokkaido University in Sapporo, on September 20-23, 2016, where three Societies of Engineering Sciences Society (ESS), Communications Society (CS), and Electronics Society (ES) joined.

In the Conference, the IEICE Technical Committee on Information Communication Management (ICM) hosted a full English Session entitled "Network and Service Design, Control and Management" as one of 7 Symposium Sessions which focused on special topics of advanced technologies.

2. Background of ICM English Session

ICM has been hosting English session every year since 2004. The purpose of this English session is to contribute to the globalization of IEICE by offering the chance of the presentation and discussion in English to the foreign researchers/students living in Japan and the overseas researchers/students.

Figure 1 shows the change in the number of contribution papers since 2004. When the session began in 2004, only 15 papers were submitted. Since then, the number of papers has gradually increased and it reached 55 papers in 2013. Although it decreased in these years, it keeps around 40 after 2008.

The holding period of the session in 2004 was one and half days, and that in this year was 4 days, i.e. whole period of the IEICE Society Conference.
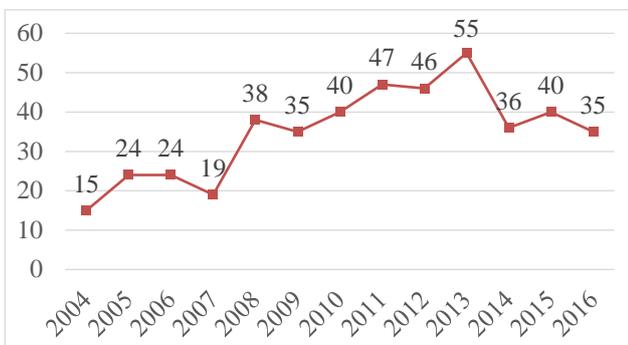
Fig. 1   The number of contribution papers since 2004

3. Presentations in ICM English Session

The contribution papers were classified into 10 sub-sessions according to the topics and set up every day during the Society Conference. Various topics are discussed in each sub-session every year.

Figure 2 shows the number of papers corresponding to their topics. 8 papers were especially concerning M2M (Machine-to-Machine) or IoT (Internet of Things). It collected the most papers in this year. Other wireless-related topics such as mobile networks, cellular systems, edge computing also had many papers. On the other hand, optical networks received much attention again.
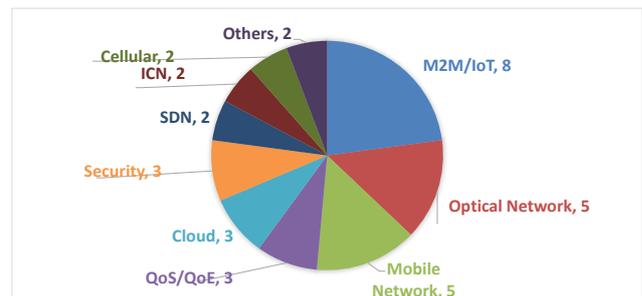
Fig. 2   The number of contribution papers corresponding to their topics

4. Authors

Figure 3 shows the number of papers corresponding to the categorization of the presenter's affiliations. 70% of the presenters belonged to the university. 15% belongs to research institutes, and remained 15% belongs to the industries. The situation in which the contribution from the university occupied the majority did not change. But, the number of submissions from industries has increased compared with the last year.

Although most of presenters were international students studying in Japan and foreign researchers working in Japanese industries, 9 presenters were Japanese students or researchers. In this symposium, ICM expects the open contribution from not only the university but also enterprise, and expects the various presenters from not only the international students and the foreign researchers but also Japanese students and researchers, too.
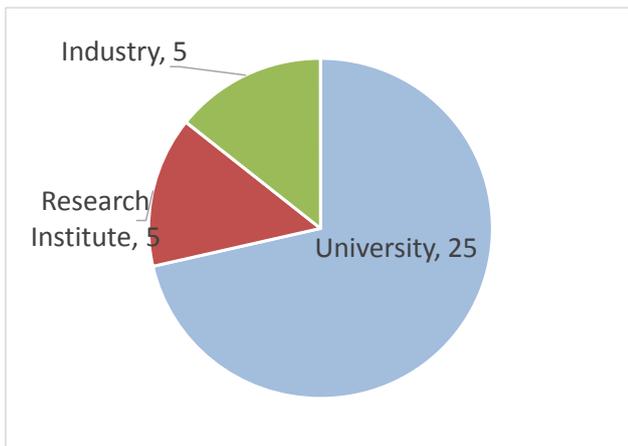
Fig. 3   The number of papers corresponding to the categorization of the presenter's affiliations

Every presenter and audience enthusiastically discussed the ideas and opinions in the time assigned for question and answer (Fig. 4). Since the assigned time passed quickly, some presenters and questioners continued their discussion here and there even into the break time.

Fig. 4   ICM English session in 2016

5. Award of ICM English Session

ICM will select the best papers and award a prize of the session in the near future to encourage their continuous activities. The best papers will be awarded in the upcoming ICM workshop in March 2017.

Table 1 shows the awarded papers presented in the 2015 IEICE Society Conference in Sept. last year [2-4]. Its awarding ceremony took place in the last ICM workshop (Fig. 5).

6. Conclusions

ICM English session in 2016 successfully finished with a lot of excellent presentations and a very active discussion. The organizer believes that this session became fruitful for all people and was able to contribute to the globalization of IEICE. He wishes that more papers will be contributed to the session in the next year.

Table 1   English session Awardees of ICM Committee

Awardees	Title
Tiantian Jiang, Masaki Ito, Kaoru Sezaki (The Univ. of Tokyo)	Estimation of Crowd Density and Mobility in Mass Event Using Wi-Fi Direct
Koustubh Gaikwad, Tomoaki Ohtsuki (Keio Univ.)	Scalable and Cost-effective Live Video Encoding and Delivery in Cloud
Bo Wei, Kenji Kanai, Sakiko Takenaka, Jiro Katto (Waseda Univ.)	Throughput Prediction based on Stochastic Model of Mobile Network

Fig. 5   Winner of ICM English session award

7. Acknowledgement

The organizer would like to thank Prof. Yoshiaki Tanaka at Waseda University, who made a great contribution in soliciting papers, utilizing his nation-wide academic authority and human relations. He would also like to thank all the member of the ICM committee, the attendees and everyone who contributed to the discussions and supported the session.

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Report on the 6th International Symposium on Network Virtualization

Takeshi Kinoshita*, Norio Sakaida*,
and Yutaka Takita**

* NTT Network Innovation Laboratories
** Fujitsu Laboratories Ltd.

1. Introduction

The Sixth International Symposium on Network Virtualization was held on September 2nd, 2016, at the University of Tokyo, Japan. The symposium has been held annually since 2011 to promote research and development of network virtualization through international collaboration of researchers, aiming at realizing new communications infrastructure using the technology.

2. Overview

The theme of this year's symposium was "Toward Future 5G/IoT infrastructure with network softwarization." Like in the last year, latest research activities and technological issues on network softwarization were discussed with the focus of 5G mobile networking, which included Internet of Things (IoT).

The symposium was co-hosted by IEICE Technical committee on Network Virtualization; Graduate School of Interdisciplinary Information Studies, Graduate program for social ICT Global Creative Leaders (GCL), the University of Tokyo (U-Tokyo); The University of Tokyo Interfaculty Initiative in Information Studies; Network Virtualization Working Group, JSPS 163rd Committee on Internet Technology (ITRC); and National Institute of Information and Communications Technology (NICT). Mr. Katsuhiro Shimano of NTT Network Innovation Laboratories led the Symposium Steering Committee.

The presentations were streamed live to several sites in Taiwan. Nearly 100 researchers and engineers from both industry and academia, including those participating remotely, joined the conference. As in the past, there were many student attendees, too. A social gathering was held after the symposium to facilitate the international interaction.

3. Session Program

The symposium started with the greeting by the chairman of the symposium, Mr. Shimano, followed by three opening speeches by Prof. Toshiyuki Nakata of GCL, Prof. Akihiro Nakao of U-Tokyo/ITRC, and Mr. Fumihiko Tomita of NICT.

Fig. 2   Greeting by Mr. Katsuhiro Shimano (Chair)

In the first of the following technical sessions, three speakers from the US made presentations about the country's latest activities. The first speaker, Mr. Jim Kurose, is assistant director of National Science Foundation (NSF) and leads its Computer & Information Science & Engineering (CISE) research area. He introduced current activities in the field of wireless networking. A number of wireless testbeds have been awarded by NSF, he noted, showing growing importance of wireless communications. He also mentioned various moves regarding network virtualization, such as CloudLab and Chameleon cloud systems.

The other two speakers, Mr. Chip Elliott and Mr. Glenn Ricart represent GENI and US Ignite, respectively, and are frequent participants in this annual meeting. This year, Mr. Elliott talked about how

Fig. 1   Participants in the symposium

to go 'beyond the Internet.' As the technical trends in Software Defined Networking (SDN), Network Functions Virtualization (NFV), distributed data centers, etc. were converging, the next steps should be interconnecting domains via Software Defined Exchanges (SDX) and creating Software Defined Infrastructure (SDI), he said. He emphasized the importance of wireless networks with deep programmability as an integral part of SDI.

Fig. 3   Presentation by Mr. Chip Elliott

Mr. Ricart's talk was about 'ubiquitous edge,' which would play an even more important role in an era of IoT. He explained how it would fit in high bandwidth, virtualized networks by showing the theoretical rational and many examples to utilize edge functionalities. Both Mr. Elliott and Mr. Ricart introduced 'Plat-forms for Advanced Wireless Research (PAWR),' which is an NSF-supported effort to build out four cities across the US with experimental wireless infrastructure for research use.

In the second technical session, Mr. Yuji Inoue of Toyota Info Technology Center made a presentation about Intelligent Transportation Systems (ITS), in which he explained how future vehicles could be networked in an industrial as well as social infrastructure. He introduced the latest moves in standardization and presented possible applications utilizing IoT, cloud, and so on.

Prof. Fabrizio Granelli, the next speaker, is from the University of Trento, Italy. His talk was about virtualization of 5G mobile networks, ranging from

Fig. 4   Presentation by Prof. Fabrizio Granelli

radio to non-radio parts. He explained a number of latest research moves to expand SDN and NFV concepts to 5G, like the one seen in dynamic spectrum slicing, thus emphasizing the increasing importance of network softwarization in this field.

Finally in this session, Prof. Nakao of U-Tokyo made a presentation. His talk also covered various 5G issues, including standardization. At ITU-T, he has led the work regarding network softwarization. He explained ongoing works and latest issues discussed at various organizations. He also discussed the roles that open source software and their applications could play.

The final session was a panel discussion with Prof. Nakao as the chair and Mr. Shimano, Prof. Nakata, Prof. Granelli, and Mr. Elliott as the other panelists. There have been substantial technological development, including standardization, since researches on network virtualization started, and now the technologies are converging as seen in the trends described as network softwarization and SDI. The panelists exchanged opinions about what areas, aspects, or technical issues were remaining and discussed what the next steps should be.

Next to the conference room, there were four exhibition booths, which were displayed along with the

Fig. 5   Exhibition

sessions. In each booth, researchers from industry and academia explained their newest activities using demonstrations and posters.

Additional information about the program is available at the symposium website [1].

4. Conclusion

The idea of network softwarization is expanding in many technological areas. 5G mobile networking and IoT are one of the hottest areas where new use cases and applications of network softwarization are examined and developed intensively. This year's symposium successfully showed the latest moves and the future directions.

5. Reference

[1]   http://www.ieice.org/~nv/english/symposium1

Activities of Technical Committee on Optical Fiber Technologies (OFT)

Ikutaro Ogushi* Terutake Kobayashi**
NTT*, Fujikura Ltd.**
Web page: http://www.ieice.org/cs/oft/jpn
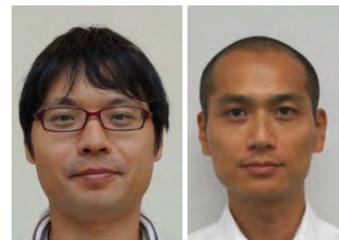
1. Introduction

The Optical Fiber Technologies (OFT) committee, which was established in April 1998, is one of the technical committees of the Communications Society of the IEICE. One of the most important aims of our committee is to contribute to technological innovation in relation to optical fiber technologies for the development of industrial applications. We do this by focusing on the technologies from cross-sector viewpoints with reference to communication engineering, measurement technologies, optical devices, and materials.

2. Covered Research Fields

OFT is concerned with a wide variety of research related to optical fibers and optical systems (Table 1). Our topics of interest mainly include optical fiber sensing, optical fiber devices, optical fiber systems, optical fiber wiring/installation, maintenance/operation, and the design of optical fiber/cables. We discuss optical devices that are applied to actual communication equipment. OFT covers research areas ranging from basic optical technology to actual maintenance.

However, our topics are not limited to the above. We would like to engage in discussions with industry and academia unrelated to communication. We are interested in discussing the topics underlined in red in Table 1. The use of optical fiber in various industries has actually been increasing. We also organized a symposium in cooperation with optical fiber systems for the medical field and structural health monitoring field at past IEICE Society and General Conferences.

3. OFT Activities in FY 2015

3.1 Technical Meetings

We hold one- or two-day technical meetings six times a year. Many researchers participate in the meetings, and they report their latest results. The schedule in FY 2015, which consists of six regular technical meetings, is shown in Table 2. Several of the meetings are co-organized with other committees. Sixty-six papers were presented at our regular meetings in FY 2015 and there were 521 participants.

3.2 OFT Encouragement Award in 2015 (calendar year)

Since the program was launched in 2011, OFT has encouraged the research activities of younger researchers. This program has two awards for younger researchers and students.

The winners of the Young Researcher Award were Masaki Wada (NTT) and Chihiro Kito (NTT) who both presented papers [1-2].

The winners of the Young Researcher Award for Students were Naoto Kono (Shimane Univ.), Hiroshi Yamazaki (Soka Univ.) and Katsuyoshi Sakaime (CIT) who also presented papers [3-5].

Figure 1 shows a photograph taken at the award ceremony.

Table 1 Topics

Major Topic Areas	Topics
Optical fiber sensing	Optical fiber probe, Optical fiber gyroscope, Optical fiber sensor device, Distributed optical sensing, Remote optical sensing, Optical fiber measurement, Optical reflectometry
Optical fiber devices	Optical signal information processing, Optical fiber interferometer, Optical fiber amplifier, Optical fiber laser, Optical fiber coupler/splitter, Optical filter
Optical fiber systems	Image/Illumination/Display, Material processing system, Medical system, Biological system, High-power system, Environmental system, Communication system
Optical fiber wiring/ installation, maintenance/ operation	Optical line testing system, Optical line management, Optical line reliability, Optical line design, Optical line construction technique, Optical connector/interconnection, Optical line components
Optical fiber/cable design	Optical fiber characterization, Optical fiber reliability, Optical propagation analysis, Analysis of optical fiber characteristics, Optical fiber cable/Optical fiber cord, Optical fiber for various uses

Red underlined parts include both communication and non-communication areas

Table 2　Technical meetings schedule for FY 2015

Date	Venue	Joint committee
2015/5/21-22	Kanazawa Kinrousya Plaza (Kanazawa City)	PEM
2015/8/27-28	Otaru Chamber of Commerce & Industry (Hokkaido)	OCS, LSJ
2015/10/22-23	Mie Univ.	
2015/11/12-13	Matsuyama Shimin Kaikan (Matsuyama City)	IEE-CMN, ITE-BCT, OCS
2015/12/11	The University of Electro-Communications	
2016/2/18-19	Okinawa Univ.	OPE, OCS

Fig. 1　Winners of OFT Young Researchers Award in 2015: L-R, M. Wada, C. Kito,
N. Kono, H. Yamazaki, and K. Sakaime

3.3 Activities of IEICE Society and General Conferences

Seventy-six papers were presented at the IEICE Society and General Conferences in FY 2015. We co-organized the symposium "Optical fiber sensors - current and future trends-" by the PEM committee on 15th March 2016, at the IEICE General Conference 2016 (March 15th-18th, 2016, Kyushu Univ., Fukuoka). Eleven outstanding speakers were invited, and they gave talks on topics including optical sensors and their applications. Moreover, another symposium, "Challenges in space division multiplexing technologies", was co-organized by the EXAT, OCS, OPE and PN committees. There were seven invited talks and a panel discussion involving front-line researchers.

We are now planning to hold a highly attractive symposium on optical fiber technologies at the IEICE General Conference 2017 (March 22nd-25th, 2017, Meijo Univ., Nagoya).

4. Technical Meetings in FY 2016

We plan to hold six successive technical meetings as shown in Fig. 2. We would welcome your submissions to and/or participation in our conferences (http://www.ieice.org/cs/oft/jpn).

5. Conclusion

This report has summarized the activities of the Technical Committee on Optical Fiber Technologies. We will focus on the area of optical fiber systems for non-communication use. To conclude, we would like to thank all the speakers and participants for their contributions.
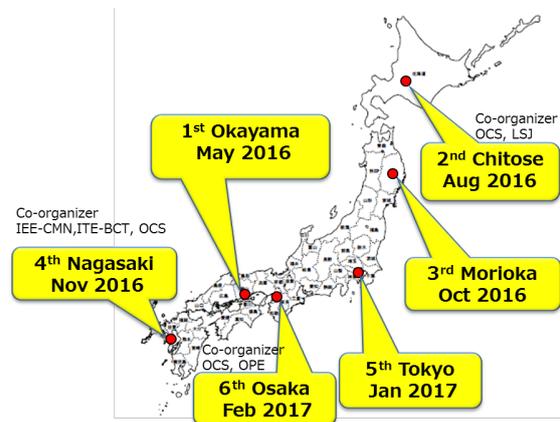
Fig. 2　Regular technical meetings in FY 2016

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Report on Special Invited Symposium in 2016 IEICE General Conference: Wireless Communication Quality and QoE

− An Invitation to WCQ −

Takefumi Hiraguri[†] , Takako Sanda[‡], Kimiko Kawashima[††], Mamiko Inamori[‡‡], Ryoko Matsuo[†‡] and Saeko Oshiba[‡†]

[†]Nippon Inst. of Tech., [‡]Panasonic, [††]NTT, [‡‡]Tokai Univ., [†‡]Toshiba, [‡†]Kyoto Inst. of Tech.

1. Summary of Special Invited Sessions

In the 2015 IEICE General Conference, the technical committee on Communication Quality (CQ) organized the special session on communication quality of various wireless communications systems by inviting five speakers from research fields of antenna and propagation, signal processing, and wireless communication protocols including medium access control (MAC) and application layer technologies. This symposium gained considerable attention.

In light of this, more invited symposiums were held in the 2016 IEICE General Conference based on the matching or dissidence of both the quality on physical layer and quality of experience (QoE). Moreover, it is this consideration and request technology/evaluation method. The invited speakers are five research and development people, each involved with excellent quality of research in different fields of systems. Figure 1 shows the five speakers with the Session chairman (Prof. T. Hiraguri). Then a panel session was held after the invited speech. In addition, the combined use of wireless systems with communication quality were argued on. In conclusion, we determined the importance of the collective strength in wireless communication and future directions. The five speakers explained the following sections. Section 2 was explained by Ms. T. Sanda, Section 3 by Ms. K. Kawashima, Section 4 by Prof. M. Inamori, Section 5 by Dr. R. Matsuo, and Section 6 by Prof. S. Oshiba.

2. QoS Control Methodologies and Speech Codecs, the Fundamentals of QoE in VoLTE

In this presentation, I explained QoS control methods used for the Third Generation Partnership Project (3GPP) Voice over LTE (VoLTE) network, and also introduced the Enhanced Voice Services (EVS) codec, which improves user experience significantly.

Regarding QoS control methods, I demonstrated that different values of QoS Class Identifier (QCI) characteristics, e.g., Priority Level, Packet Delay Budget, and Packet Error Loss Rate, are set to the so-called bearers for voice data and session control signaling. I also described some technologies used in the LTE Radio Access Network to satisfy the QoS requirements including Adaptive Modulation Coding (AMC), Hybrid Automatic Repeat reQuest (HARQ), and Transmission Time Interval (TTI) bundling. Moreover, I explained application-specific QoS control such as Rate Adaptation and Redundancy Request.

Later in the presentation, I explained EVS codec characteristics such as super-wideband (SWB) support, with quality enhancement for speech and music. From a listening demonstration, the audience experienced the degree of user experience enhancement from EVS SWB 13.2 kbps compared with AMR-WB 12.65 kbps, which is widely used in VoLTE services.

Several countries, including Japan, already provide EVS VoLTE services.

Fig. 1   Invited speakers and Session chairman

3. QoE Assessment for Optimizing the Quality of Mobile Services

Recently, users of video streaming services for mobile devices are increasing. Quality of Experience (QoE) depends on mobile networks and user environments. Therefore, to provide a high-quality service, it is important to design it based on QoE, monitor QoE, detect problems, and control networks and applications.

First, I explained that subjective quality assessment can be used for designing networks and applications and that objective quality assessment models can be used for monitoring QoE.

Then, I presented the QoE degradation factors for progressive download (PDL) video streaming services as an example of mobile services. In addition, I introduced an example of quality optimization for mobile video streaming services. Even when higher video quality is achieved with a higher encoding bitrate, video playback may frequently stall in a congested mobile network due to insufficient throughput. In this case, QoE control carried out by the network operator and video streaming service provider in a collaborative manner is an effective means of optimizing QoE.

To design a more realistic service, it is important to know how a user uses the service and how his/her behavior changes due to quality degradation. Therefore, I finally suggested the importance of user behavior analysis.

4. High Efficiency of Power Supply System for Smart Grid

Recently, high efficient power supply systems have been receiving much attention. In this talk, I introduced two systems, which are the battery system and wireless power transfer systems. The developed battery system can integrate the power generated from natural energy resources into the conventional power grid and is capable of dynamically transmitting and distributing power. In this system, the battery unit can be connected following the control unit, which makes the system more scalable. To deliver the power safely, the quality and speed of communication is very important.

As a promising technique to charge the devices easily, wireless power transfer has attracted extensive research attentions. In wireless power transfer system, the self-resonant antennas rely on the interplay between distributed conductance and distributed capacitance, which effects the power transfer efficiency. When change is detected at a transmitter, information such as frequency, required power and element values should be transmitted shortly and adapt to the desired power signal accordingly. To enable fast reaction, it is desirable to have the ability to change the power signal according to the request of the receiver when providing power at the transmitter. I introduced the reliable data communication for the system control in wireless power transfer system.

5. Body Area Network and Communication Quality

Reflecting the rising awareness of health, technologies to monitor people's living conditions and health status through multifunctional wearable devices have been attracting attention in recent years. In order to fulfill such requirements, a total solution is required that facilitates the collection, management, and maintenance of the measured data via a wireless network. The wireless communication system conventionally used for wearable devices is based on one-to-one communication. However, the introduction of a body area network (BAN) is essential for the capture and collection of medical data with higher reliability using multiple sensors in settings such as hospitals. To create a new low complexity BAN standard, European Telecommunications Standards Institute (ETSI) initiated a new Technical Committee (TC), TC Smart BAN in March 2013.

In this presentation, I explained technical requirements of the new Smart BAN system, which are ultra-low power consumption, robustness to interference, timely access mechanism and optimum control of QoS for emergency signals. I also explained our proposed basic access mechanism to reduce power consumption as well as delay of emergency signals. Based on our proposed schemes, ETSI published TC Smart BAN Medium Access Control (MAC) and Physical Layer (PHY) standards in April 2015.

6. Communication Quality of Visible Light Wireless Communication Systems

Visible light communication (VLC) based on LEDs has been a promising candidate for indoor high-speed wireless access, as LEDs can combine illumination and data transmission. VLC can use existing lighting, such as traffic lights, commercial displays, as a communication infrastructure.

First, I explained relationship between the quality on physical layer and quality of experience (QoE) of VLC. The main challenges for communication using the visible light spectrum are flicker mitigation, dimming support, and the background optical noise tolerance. Any potential flicker resulting from modulating the light sources for communication must be mitigated. The visibility evaluation experiments were conducted to satisfy QoE.

Then, I introduced Pedestrian-Support Systems using LED self-illuminating bollards as an application example of VLC. It provides the user safety information in the neighborhood or the route information, and receives a request from the user and traffic information by the LED light. We have interviewed the people of weak eyesight and the elderly to find out their needs. The system was designed, on the request of them, to inform danger condition.

7. Conclusion

I hereby thank the five speakers for providing such meaningful guidance. This invited symposium was successfully conducted.

Highlights from IEEE HPSR 2016: 17th International Conference on High Performance Switching and Routing

Naoaki Yamanaka, General Co-Chair, Keio University, Japan
Eiji Oki, TPC Co-Chair, The University of Electro-Communications, Tokyo, Japan

HPSR 2016, IEEE 17th International Conference on High Performance Switching and Routing was held at Keio University, Yokohama, Japan, on 14-17 June, 2016. The conference was sponsored by the IEICE Communications Society and the IEEE Communications Society, and was co-located with 12th International Conference on IP+Optical Network (iPOP) which is one of the largest conferences & exhibitions about Optical or IP backbone networks. The conference was supported by IEICE Photonic Network Technical Committee, National Institute of Information and Communications Technology, Japan, Support Center for Advanced Telecommunications Technology Research Foundation, Japan, and Yokohama Convention & Visitors Bureau, Japan.

The conference addresses numerous challenges of today's data networks, which are being subject to significant changes driven by new network applications, such as cloud computing, Internet of things and other new concepts. As a result, new technologies are needed to efficiently and effectively cope with the increasing of traffic demands. This conference brought together researchers from around the world to present the latest advances in the fields of high-performance networks. The participants discussed switching and routing capabilities that ought to be more intelligent, efficient, reliable and more application coordinating than ever before.

The statistical information of the program is a rich technical program comprising of 31 excellent technical full-paper presentations and eight poster-paper presentations, three keynote speeches, one invited speech, four tutorials, technical tours, and workshop presentations. The number of participants of the conference was 101 which consist of academia 69, industry 26, government 4, and others.

Papers submitted from 26 countries, including Asia, North America, and Europe. The submitted papers were carefully peer-reviewed by our Technical Program Committee (TPC). Each paper received at least three reviews, thus hopefully providing valuable feedback to the authors and ensuring high confidence in the outcome of the review process. For each track, the accepted papers were selected based on all the review results including reviewers' comments.

On Tuesday, three tutorials were offered. Prof. Abbas Jamalipour, as shown in Fig. 1 (University of Sydney, Australia) talked on scaling dense-traffic cellular networks through software defined networking. Prof. Noriaki Kamiyama (Osaka University & NTT Network Technology Laboratories, Japan) delivered a tutorial on advances in reducing Web response time. Dr. Dimitri Papadimitriou (Nokia - Bell Labs, Belgium) reviewed a number of open challenges in network optimization. Note that each tutorial had about 70-80 attendees, which is a larger number than our expecting and the attendees enjoyed the lecture of each session.

Fig. 1   Prof. Abbas Jamalipour

On Wednesday afternoon, we had two keynotes in the HPSR and iPOP joint plenary session, as shown in Fig. 2. Before the two keynotes, a piano concert was held. Rutsuko Yamagishi (Fig. 3), renowned Pianist, played F. Liszt and S. Rachmaninov on the piano at Fujiwara Memorial Hall, which is well decorated, at Keio University. Prof. Ken-ichi Sato (Nagoya University, Japan) gave a keynote on how optical technologies are expected to help mitigate the adverse effects of the imminent demise of Moore's Law. He also presented energy saving technology in data center networks. Prof. Tarik Taleb (Aalto University, Finland) presented a keynote on network softwarisation toward 5G that is one of the hottest topics in EU.

Fig. 2   HPSR and iPOP joint plenary session

Fig. 3   Rutsuko Yamagishi's piano concert

On Thursday morning, we had a keynote presented by Prof. Akihiro Nakao (University of Tokyo, Japan), who presented software defined data plane and applications. There are many questions and discussions in his presentations, which means that his talk is very important. The joint plenary attracted more than 300 attendees, as shown in Fig. 4.

Fig. 4   Plenary session at Fujiwara Memorial Hall

The technical program, from Wednesday through Friday, comprised eight regular technical sessions entitled: data center networks, routing, optical switching and networking, software defined networks, secure and green technologies, switches/packet processors/traffic monitoring, network virtualization and resource allocation. On Thursday afternoon, we had a poster session with eight poster presentations and workshop on high performance IP and photonic networks, including 18 poster presentations.

On Friday morning, Prof. Luigi Rizzo (Università di Pisa, Italy) delivered an invited talk focusing on how to build efficient network data planes in software, and Dr. Dimitri Papadimitriou (Nokia - Bell Labs, Belgium) gave an invited talk on research challenges and perspectives towards Information-driven networks.

As a part of the IEEE HPSR 2016 Conference, several technical tours, such as Keio K2 Campus tour for visiting advanced science and technical labs and Keio DMC tour for emphasizing research on digital media and content, were held at Keio University, Yokohama, Japan. We participated the Keio K2 Campus tour, which was started at 3:30 pm on 14th Jun, 2016 from Raiosha, Keio University, Hiyoshi Campus. The tour was covered with three lab visits and technical demonstrations, which are haptics and artificial technology for 21st century, photonics polymer project, and elastic lambda aggregation network. We first visited the haptics and artificial technology lab including real demonstration, as shown Fig. 5. The professor and PhD students demonstrated how their innovations can support medical technology.

Fig. 5   Technical visit

The next lab visit was intended for the photonics polymer project. Prof. Yasuhiro Koike demonstrated a variety of their innovations, including world-leading graded index plastic optical fiber, highly scattered optical-transmission polymers, zero-birefringence polymers, and super-birefringent films. Utilizing these core technologies that are based on the essential principles of light, the Keio Photonics Research Institute (KPRI) has been exploring possible applications of polymers in the field of photonics by elucidating their fundamental mechanisms, in an attempt to discover new functions. These technologies are not only a pure research stage, but also products by startup company. Thereafter, we moved to an elastic lambda aggregation network lab, which is one of the largest optical network consortium type joint research projects in Japan, collaborated with NTT, KDDI, Hitachi, Oki, Furukawa, and Keio University. The lab members demonstrated us regarding the future optical metro-access integrated network that can reallocate physical resources using scalable-elastic and route-selective optical paths. The entire tour was enjoyable and we learned new technologies.

The other lab tour was Digital media and content (DMC) tour. DMC is designed by researchers from Keio University for the purpose of research on media and content. It also provides testing services based on the digital cinema system specification by Digital Cinema Initiatives (DCI), a joint venture of Hollywood

studios. Prof. Kunitake Kaneko was this tour guide. Participants had an experience of the same content of testing movie but taken in different environments. Moreover, the participants experienced a sample 3D movie. The participants were allowed to see the server room of the system. This studio is not only doing the testing but also managing the archive of the media. Apart from the studio, researchers of this lab introduced their works.

After the two tours were finished, 70-over participants joined Get Together Party, which was conducted at Yagami campus, Keio University, as shown in Fig. 6.

Fig. 6   Get Together Party

Before the conference banquet on Tuesday, the Yokohama walking tour was held, as shown in Fig. 7. The walking tour was about 2 km, walking around the Yokohama bay area. The walking tour started from Minatomirai station and reached Peking Hanten Restaurant, China town, which was the banquet venue, and most of participants joined this walking tour, as shown in Fig. 7.

Fig. 7   Yokohama walking tour

During the banquet, the conference best paper award was presented to "On-chip Order-Exploiting Routing Table Minimization for a Multicast Supercomputer Network," authored by Andrew Mundy, Jonathan Heathcote, and Jim D. Garside (University of Manchester, United Kingdom). Andrew Mundy received the award certificate plaque and Japanese traditional happi coat from Prof. Eiji Oki, TPC Co-chair, as shown in Fig. 8. The best paper was selected by HPSR 2016 Award Committee based on all the review results, including reviewers' comments and reviews by the Committee.

Fig. 8   HPSR Best Paper Award

Prof. Matathi Veeraraghavan and Prof. Weiqiang Sun, TPC Co-Chairs of HPSR 2017, announced that the next HPSR would be held in Campos do Jordão, Brazil, on 27-30 June, 2017. More information can be found at http://www.ieee-hpsr.org/. We are looking forward to seeing you at Brazil.

Report on the 36th IEEE International Conference on Distributed Computing Systems

Teruyuki Hasegawa‡, Hiroshi Shigeno† and Teruo Higashino‡

KDDI Research, Inc.‡

Keio University†

Osaka University‡

1. Introduction

The 36th IEEE International Conference on Distributed Computing Systems (ICDCS 2016) was held at Nara Hotel, Nara, Japan from June 27 to June 30, 2016 [1]. This year's ICDCS is the 36th edition of ICDCS conference. ICDCS is the premier conference in the fields of *distributed computing systems*. This is the third time that ICDCS was held in Japan since 1992 and 2004.

2. ICDCS 2016 Workshops and Tutorials

ICDCS2016 was held in Nara Hotel (Fig. 1), which was founded in 1909 to serve as the premier guest house in the Kansai region for visiting dignitaries. The hotel is a historical structure located near Nara Park.

The conference was held for four days. On the first day, June 27, the five workshops and four tutorials were held as follows.

Workshops

- The 15th International Workshop on Assurance in Distributed Systems and Networks (ADSN 2016)
- The 6th International Workshop on Big Data and Cloud Performance (DCPerf 2016)
- The International Workshop of Software-Defined Data Communications and Storage (SDDCS 2016)
- The 2nd International Workshop on Security Testing And Monitoring in Distributed Systems (STAM 2016)
- The 1st International Workshop of Edge Computing (WEC 2016)

ADSN 2016 focuses on the assurance in distributed systems and networks such as transportation, automotive systems, smart energy grids and E-commerce. DCPerf 2016 focuses on cloud data management and big data analytics / platforms. SDDCS 2016 focuses on software-defined data communications and storage. STAM 2016 focuses on security testing in distributed systems and formal modeling. WEC 2016 focuses on peer-to-peer systems and edge / fog centric computing.

Tutorials

- "A Look at Basics of Distributed Computing", Prof. Michel Raynal (IRISA, University of Rennes, France)
- "Cognitive Technologies for Smarter Cities", Dr. Martin G. Kienzle (Electronics Industry Leader, IBM T. J. Watson Research, U.S.A.)
- "Cognitive Technologies for Smarter Cities", Dr. Martin G. Kienzle (Electronics Industry Leader,

Fig. 1   Nara Hotel

Fig. 2   Tutorial

- "Reflecting on the past, preparing for the future: from peer-to-peer to edge-centric computing", Prof. Alberto Montresor (The University of Trento, Italy)
- "Software-Based Networks: Leveraging high-performance NFV platforms to meet future communication challenges", Prof. K. K. Ramakrishnan (University of California, Riverside, U.S.A.)

Prof. Michel Raynal provided the theoretical concepts and algorithms of distributed systems. Dr. Martin G. Kienzle talked the recent trends of smart city research. Prof. Alberto Montresor explained the basic concepts of P2P, edge-centric computing and blockchain. Prof. K. K. Ramakrishnan talked about the recent trends in network areas.

Fig. 3   Keynote Speech

We have got a financial support from National Institute of Information and Communications Technology (NICT), Japan, and provided interesting four tutorials at the conference. It is a rare case that ICDCS can provide tutorials at the conference.

3. ICDCS 2016 Main Conference

From the second day, June 28 to the fourth day, June 30, the main conference of ICDCS2016 was held. In the conference, we have two keynote speeches as follows.

Keynote Speeches
- "What's So Special about Big Learning - a Distributed Systems Perspective", Prof. Phillip Gibbons (Carnegie Mellon University, USA)
- "Power of Big Data - from Commercial Profits to Societal Benefits -", Prof. Masaru Kitsuregawa (National Institute of Informatics / University of Tokyo, Japan)

More than 200 participants listened to the exciting keynote speeches (Fig. 3).

Technical Sessions

The main conference provides a forum for engineers and scientists in academia, industry and government to present their latest research findings in major and emerging areas of distributed computing. The topics of particular interest in ICDCS 2016 include:
- Distributed Data Management and Analytics
- Cloud Computing and Data Center Systems
- Distributed Operating Systems and Middleware
- Distributed Algorithms and Theory
- Distributed Fault Tolerance and Dependability
- Security and Privacy in Distributed Systems
- Social Networks and Crowdsourcing
- Energy Management and Green Distributed Computing
- Mobility-based and Wireless Distributed Systems
- Distributed Systems for Smart Communities or the Internet of Things

We have 381 paper submissions to the main conference and accepted 68 papers (the acceptance rate is 17.8%). The accepted papers were presented in 17 paper sessions in two parallel tracks (One of them was a single-track special session). Additionally, we had a single-track poster/demo session that accommodated 18 high quality poster presentations and 11 interactive/participatory demos.
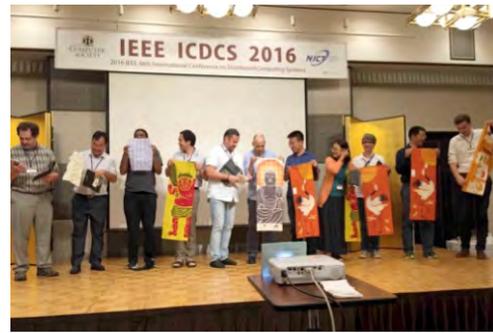
Fig. 4   Banquet

The program committee (TPC) decided to shorten the presentation time for each paper in paper sessions to 20 minutes including question-and-answer time. This made the sessions very efficient and left more time for interactive exchange among the participants, while this demanded a high quality presentation for each paper. The single-track demo / poster session was also well received with very active discussions.

Best Paper Award

The best paper was selected based on audience vote. Three excellent papers were nominated for the best paper by the TPC and they were presented in a single-track best paper nominees session. After the session, the audience casted their votes for the best paper.

The Best Paper Award winner was:

"RITM: Revocation in the Middle",
Pawel Szalachowski, Laurent Chuat, Taeho Lee, and Adrian Perrig (ETH Zurich)

This paper proposes a framework, RITM, in which middleboxes store revocation-related data to provide secure revocation-checking mechanism while preserving user privacy. It also proposes to take advantage of content-delivery networks for fast and cost-effective disseminations of revocations.

On June 29, we have ICDCS 2016 Banquet (Fig. 4). Before the banquet, many participants visited Kohfukuji Temple National Treasure Hall. The participants enjoyed the culture and foods in Nara.

4. Conclusion

ICDCS 2017 will be held in Atlanta, GA, USA on June 5 to 8, 2017. In ICDCS 2017, three tracks, (1) the industry and experimentation track, (2) the applications and experiences track and (3) the vision track are newly set up. For details, please see [2].

5. Acknowledgements

6. References

[1]   http://www-higashi.ist.osaka-u.ac.jp/icdcs2016/
[2]   http://icdcs2017.gatech.edu/

Report on OECC/PS 2016

Kimio Oguchi[†] and Akihiro Maruta[‡]
[†]Seikei University, [‡]Osaka University

1. Introduction

OECC/PS 2016 conference was held from 3rd through 7th in July, 2016 at TOKI MESSE Niigata Convention Center, Niigata, Japan (Fig. 1). The conference brought together international leading researchers, scientists and engineers who have been actively working in optical devices and modules, optical transmission and optical networking, optical fibers, optical switching system, and related technologies. The conference combined the following two major international conferences, which widely covered in the field of "optics (photonics)" from devices and modules to systems and networks.

- The 21st OptoElectronics and Communications Conference (OECC 2016)
- International Conference on Photonics in Switching 2016 (PS 2016)

Fig. 1 Entrance of TOKI MESSE
Niigata Convention Center

The combination of these conferences made this the most significant and valuable conference for participants from all over the world, and also provided forums for the discussion of significant progress of research and development of appropriate technologies.

The conference was cosponsored by IEICE Communications Society and IEICE Electronics Society, and technically cosponsored by IEEE Photonics Society, IEEE Communications Society, and The Optical Society.

2. Outline and results of the Conference

Statistics of the conference is summarized in Table 1. As shown in this table, 402 papers were submitted to the conference from all over the world (24 countries),

Table 1 Statistics of OECC/PS2016

Submitted contributed papers	402 (24 countries)
Accepted contributed papers	311 (77.4%)
Oral presentation papers	195 (48.5%)
Poster presentation papers	116 (28.9%)

and each paper was reviewed by each category expert researchers. After the review, total 311 papers were accepted for the oral (195) and poster presentation (116), hence the total acceptance ratio of the conference was 77.4%. The accepted 195 oral papers were categorized into 6 technical scopes. The technical scopes were:

1. Core/Access Networks and Switching Subsystems
2. Transmission Systems and Subsystems
3. Optical Fibers, Cables and Fiber Devices
4. Optical Active Devices and Modules
5. Optical Passive Devices and Modules
6. Photonics in Switching Systems and Related Technology

The conference was started with the six workshops in the afternoon of July 3rd: WS1. Impacts of optical network virtualization –When realizes, what happens and how it works-, WS2. Transport technologies for terabit-era and beyond (Part I: Technologies for terabit per channel optical transport / Part II: Future of optical networks –which technology can change the game?), WS3. Emerging technologies of photonic devices for non-telecom applications, WS4. Emerging novel materials for optical processing devices, WS5. Recent technologies in switching systems (Part I: Packet optical transport systems & networks / Part II: Hybrid OPS/OCS systems & networks). WS6. Technology advances in recent national projects.

The plenary session was organized on July 4th   (Fig. 2). In the first, Dr. Vishnu Shukla, Verizon Labs, USA, addressed optical transport to open transport in carrier networks. The second by Dr. Chris Doerr, Acacia Communications, USA, presented silicon photonic integrated circuits for coherent communications. The third by Prof. Rod Tucker, The University of Melbourne, Australia, addressed energy limitations in data transmission and switching. The forth by Prof. Ken-ichi Kitayama, The Graduate School for the Creation of New Photonics Industries, Japan,

Fig. 2 Plenary speakers

Fig. 3 Audiences in a session room

introduced optical packet switching : myth, fact, and promise.

In the technical sessions, there were 414 presentations (Fig. 3) in 67 technical sessions (4 days 6 parallel tracks) with including a poster session (Fig. 4), 6 tutorial talks (Standardization of optical access technologies : progress and future prospects by Dr. Jun-ichi Kani, NTT Corporation, Japan, Coherent optical communication technology by Prof. Kazuro Kikuchi, The University of Tokyo, Japan, Orbital angular momentum and SDM related technology by Prof. Siddharth Ramachandran, Boston University, USA, High speed VCSEL-based links for use in data centers and HPC by Dr. Daniel Kuchta, IBM, USA, Thermal emission control by photonic crystals by Prof. Susumu Noda, Kyoto University, Japan, Optical system architectures and control for data center networks by Prof. Dimitra Simeonidou, University of Bristol, UK) and 4 special symposia (S1. Optical access/core network evolution toward wireless 5G network era, S2. Space division multiplexing : present situation and future prospects, S3. Advanced optical technologies for future data center network (Session I: Optical technologies for the evolution of data centers / Session II: Optical switching technologies for future photonic intra-DC networks), S4. Commemorative symposium on IEEE Milestone for vapor-phase axial deposition method optical fiber : the beginning and perspectives toward future).

On July 6th, we enjoyed the banquet (Fig. 5) where the Niigata Grand Hotel was offered and Japanese traditional dram and dance were performed by Bandai daiko group and Geigi ladies, respectively. And, the best paper awards (6, one paper in each sub-committee)

and the best student/young scientist paper awards (6, one paper in each sub-committee) of OECC/PS 2016 were introduced in the banquet (Fig. 6).

The post deadline papers of 13 were submitted to the conference from all over the world and each paper was reviewed by the technical committee members. After the review, total 6 papers were accepted. The post deadline paper presentations were performed with 2 parallel sessions on July 7th, the last day.

3. Conclusion

OECC/PS 2016 was closed with great success. Finally 580 participants (registrations) with including 256 international participants (about 44%) and 166 students (about 29%) have enjoyed discussion in this conference.

CLEO-PR, OECC & PGC 2017 is announced to be held at Singapore, and PS 2017 at New Orleans, USA.
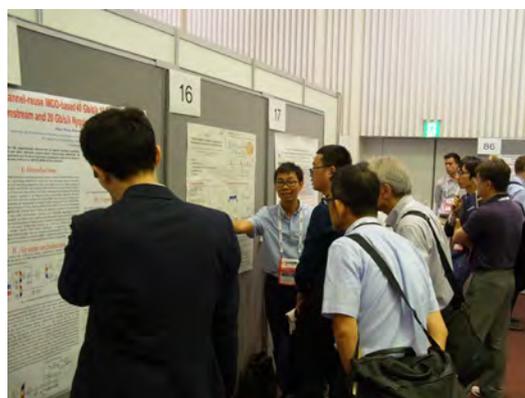
Fig. 4 Poster session

Fig. 6 Awarding Ceremony in Banquet

Fig. 5 Group Photo at Banquet

Report on 18th Asia-Pacific Network Operations and Management Symposium (APNOMS 2016)

Satoshi Yamazaki* and Toshio Tonouchi**
*Secretary of APNOMS 2016, NEC
**General Chair of APNOMS 2016, NEC

1. Overview of APNOMS 2016

The 18th Asia-Pacific Network Operations and Management Symposium was held from October 5th to 7th, 2016 in Japan [1]. APNOMS 2016 was organized by the IEICE ICM Committee, the Korean Information and Communications Society, Korean Network Operations and Management Committee (KICS KNOM). It was technically cosponsored by IEEE Comsoc. APNOMS 2016 entitled "Management of Softwarized Infrastructure" consists of five keynote speeches, one DEP session, two special sessions, four tutorial sessions, nine technical sessions, two poster sessions, two innovation sessions and the exhibition program. 210 people from 10 countries participated in this conference.

2. Sessions and Activities

Five executives delivered keynote speeches. Prof. Masayuki Murata, from Osaka University gave a speech on "Brain- and Biologically-inspired Information Networking". Dr. Sławomir KUKLIŃSKI, from Orange Labs introduced a "Borders between management, control and orchestration in softwarized networks". Dr. Woojik Chun, from KAIST showed "Trustworthy Communication Infrastructure: Principles and Framework". Mr. Kazuo Sugiyama, from NTT DOCOMO gave a speech on "NTT DOCOMO's continuous challenges toward Mobile Network Evolution". Prof. Yu-chee Tseng, from NCTU introduced "Intelligence in Edges".

In the Distinguished Experts Panel session, a chair and four panelists, including Mr. Hiroaki Sato from NTT Lab., discussed various topics with the audience in relation to the theme of APNOMS 2016, for example, management issues of Softwarized Infrastructure.

In the tutorial sessions, an overview of WiFi Network virtualization was presented by Dr. Kiyohide Nakauchi from NICT. In the special sessions, Dr. Noriaki Kamiyama from NTT Lab. introduced recent research trends in cache control of reactive content deployment.

A total of 121 papers, including 32 papers from Japan were submitted to APNOMS 2016 and of these 35 were presented in nine technical sessions. It includes 9 papers from Japan. In the poster session, 63 papers including 17 Japanese papers were delivered as poster-style presentations. These papers were published in IEICE I-Scover and IEEE Xplore. There were two innovation sessions that covered 10 topics. In the

Fig. 1   Welcome address

Fig. 2   Best paper award

exhibition program, four organizations demonstrated prototypes of their research results.

Lastly, the APNOMS 2016 organizing committee selected the top four papers with the highest overall (paper + presentation) scores from the technical session for "Best Paper Awards". One of awardees is Dr. Bo Gu from Kogakuin University, who presented "Pricing and Revenue Optimization Strategy in Macro-Femto Heterogeneous Networks".

3. Conclusion

On behalf of all OC members of APNOMS 2016, we would like to express our appreciation to all parties involved in this conference. The next APNOMS will be held in Seoul, Korea, in August 2017.

4. Reference

[1]   http://www.apnoms.org/2016/   Home page of APNOMS.

IEICE-CS Related Conferences Calendar

Date	Conference Name	Location	Note
21 Aug. – 25 Aug. 2017	The 24th Congress of the International Commission for Optics (**ICO-24**)	Tokyo, Japan	Submission deadline: 3 May 2017
22 Mar. – 24 Mar. 2017	The 13th International Symposium on Autonomous Decentralized Systems (**ISADS2017**)	Bangkok, Thailand	Submission deadline: Closed
19 Mar. – 22 Mar. 2017	The third International Workshop on Smart Spectrum (**IWSS2017**)	San Francisco, USA	Submission deadline: Closed
8 Mar. – 10 Mar. 2017	2017 IEEE International Conference on Computational Electromagnetics (**ICCEM2017**)	Kumamoto, Japan	Submission deadline: Closed
11 Jan. – 13 Jan. 2017	The 31st International Conference on Information Networking (**ICOIN2017**)	Da Nang, Vietnam	To be held **soon**
30 Nov. – 2 Dec. 2016	Microwave Workshops & Exhibition 2016 (**MWE2016**)	Yokohama, Japan	Done
20 Nov. – 23 Nov. 2016	5th International Conference on Renewable Energy Research and Applications (**ICRERA2016**)	Birmingham, UK	Done
24 Oct. – 28 Oct. 2016	International Symposium on Antennas and Propagation (**ISAP2016**)	Okinawa, Japan	Done
20 Oct. – 21 Oct. 2016	2016 IEICE - Workshop on Networks Optimization and Dimensioning (**2016 IEICE WNOD**)	Poznan, Poland	Done
19 Oct.– 21 Oct. 2016	International Conference on Information and Communication Technology Convergence 2016 (**ICTC2016**)	Jeju Island, Korea	Done
5 Oct. – 7 Oct. 2016	Asia-Pacific Network Operations and Management Symposium (**APNOMS2016**)	Kanazawa, Japan	**Reported** on this issue
3 Jul. – 7 Jul. 2016	21st Optoelectronics and Communications Conference / International Conference on Photonics in Switching 2016 (**OECC/PS 2016**)	Niigata, Japan	**Reported** on this issue
27 Jun. – 30 Jun. 2016	The 36th IEEE International Conference on Distributed Computing Systems (**ICDCS2016**)	Nara, Japan	**Reported** on this issue
14 Jun. – 17 Jun. 2016	2016 IEEE 17th International Conference on High Performance Switching and Routing (**IEEE HPSR2016**)	Yokohama, Japan	**Reported** on this issue

Please confirm with the following IEICE-CS web site for the latest information.
http://www.ieice.org/cs/conf/calendar.html

Special Section Calendar of IEICE Transactions on Communications

Issue	Special Section	Note
Apr. 2018	Optical Access System for Social Life	Submission due: 15 May 2017 **See page 35**
Mar. 2018	Network Resource Control and Management for IoT Services and Applications	Submission due: 27 March 2017 **See page 34**
Feb. 2018	Recent Progress in Antennas and Propagation in Conjunction with Main Topics of ISAP2016	Submission due: 15 February 2017 **See page 33**
Jan. 2018	Internet Technologies to Accelerate Smart Society	Submission due: 20 February 2017 **See page 32**
Nov. 2017	Network Virtualization, Network Softwarization and Fusion Platform of Computing and Networking	Submission due: 12 December 2016 **See page 31**
Oct. 2017	Opto-electronics and Communications for Future Optical Network	To be issued
Aug. 2017	Radio Access Technologies for 5G Mobile Communications System	To be issued
Jul. 2017	Smart Radio and Its Applicationsin Conjunction with Main Topics of SmartCom	To be issued
Jun. 2017	Visible Light Communications in Conjunction with Topics of ICEVLC 2015	To be issued
May 2017	No special section in this issue	
Apr. 2017	No special section in this issue	
Mar. 2017	No special section in this issue	
Feb. 2017	Antenna and Propagation Technologies Contributing to Realization of Next Generation Wireless Systems	To be issued **soon**
Jan. 2017	Challenged Networking Technologies and Its Service Quality	To be issued **soon**
Dec. 2016	Information Centric Networking: Paradigms, Technologies, and Applications	To be issued **soon**
Nov. 2016	Deepening and Expanding of Information Network Science	Vol. E99-B, No. 11
Oct. 2016	Satellite Communication Technologies in Conjunction with Main Topics of JC-SAT2015	Vol. E99-B, No. 10

Please confirm with the following IEICE web site for the latest CALL FOR PAPERS
http://www.ieice.org/event/ronbun-e.php?society=cs

------- Special Section on Network Virtualization, Network Softwarization, and Fusion Platform of Computing and Networking -------

The IEICE Transactions on Communications announces that it will publish a special section entitled "Special Section on Network Virtualization, Network Softwarization and Fusion Platform of Computing and Networking" in **November 2017.**

While ICT (Information and Communication Technologies) have become indispensable social infrastructure for supporting our social and economic activities, its various issues have been also addressed in various areas, such as flexibility to meet demands from many users, scalability to make ICT infrastructure glow involving new functionalities and technologies, efficiency in management of large scale services and heterogeneous infrastructure.

Advanced network virtualization and sofwarization are the keys to realizing next generation ICT infrastructure and expected to realize future infrastructure such that, customizable to meet a wide variety of end-user demands, scalable in accordance with service volume, efficient in resource management for heterogeneous environment, sustainable to involve new functionalities and technologies. Network virtualization and sofwarization have been studied for various areas such as cloud systems, core-networks, edge-networks, access-networks, mobile-networks, and their fusion infrastructure. Range of the fusion will be getting broader. Open-source software development will play an important role in such future ICT, because of its wider consideration and contribution from broad area of developers including SW/HW benders, ICT service providers, and end-users.

We thus call for publications (scheduled to appear in the November 2017 issue) for promoting discussion and development of technologies on advanced network virtualization, softwarization and on fusion of computing and networking. This special section solicits not only the standard full papers but also position papers describing innovative ideas.

1. Scope
This special section aims at timely dissemination of research in these areas. Possible topics include, but are not limited to:
- Network virtualization architecture for enabling multiple customized networks
- Innovative applications based on network virtualization
- Fusion of networking and computing
- Software Defined Network
- Network softwarization and open-source network softwarization
- Software defined infrastructure
- Operation and management of integrated multi-layer networks and network virtualization
- Resources monitoring for network virtualization
- Data Center Networking based on network virtualization
- Operating systems and network virtualization
- Security for network virtualization and secure services
- Testbeds for above technologies and experimental results

2. Submission Instructions
The standard number of pages is 8. The page charges are considerably higher for extra pages. Submissions of "letters" are not accepted. Manuscripts should be prepared according to the guideline in the "Information for Authors". The latest version is available at the web site, http://www.ieice.org/eng/shiori/mokuji_cs.html. The period for revising the manuscript after acknowledgement of conditional acceptance for this special section could be shorter than that for regular issues (60 days) because of the tight review schedule.

This special section will accept only papers by electronic submission. Submit a manuscript and electronic source files (LaTeX/Word files, figures, authors' photos and biography) via the IEICE Web site https://review.ieice.org/regist/regist_baseinfo_e.aspx by **December 12th, 2016** (JST). Authors should choose the Network Virtualization, Network Softwarization, and Fusion Platform of Computing and Networking as a "Journal/Section" on the online screen. Do not choose [Regular-EB].

Contact point:
Yohei Hasegawa
Systems Platform Research Laboratories, NEC Corporation
Tel: +81-44-396-2772, Email: nv+eb2017@mail.ieice.org

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Guest Editor-in-Chief: Teruyuki Hasegawa (KDDI R&D Labs.)
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------- Special Section on Internet Technologies to Accelerate Smart Society -------

The IEICE Transactions on Communications announces that it will publish a special section entitled "Special Section on Internet Technologies to Accelerate Smart Society" in the **January 2018** issue.

The Internet has become an important communication infrastructure. The Internet applications propose indispensable services for social activities. The Internet continues growing up and various devices such as not only PCs but also smartphones, tablets and sensors are connected to the Internet called "IoT (Internet of Things)". A huge number of devices connected to the Internet will make the Internet larger and more complex. In addition, new types of Internet applications and services have appeared such as crowd sourcing, crowd funding and FinTech (Financial Technology). The Internet has grown to be an indispensable smart society that supports our quality of life. To realize a smart society, the Internet architectures and protocols for connection between the devices have been changed to new generation like as low delay and high reliability. In addition, platform technologies have appeared such as sensing network and big data analysis to provide high-performance and flexibility. The Internet applications and services should include smart control that supports our activities using sensors and actuators. The network operations to provide stable quality of communications are important. More specifically, wide variations of cross-disciplinary studies will be required in addition to a technology such as architecture and robustness. Future studies to develop the Internet should include mutual relationship between society and technology in consideration with privacy and security. We thus call for publications (scheduled to appear in the January 2018 issue) for promoting discussion and development of the Internet architectures, protocols, management methods, and applications for accelerating smart society.

1. Scope
This special section aims at timely dissemination of research in these areas. Possible topics include, but are not limited to:
* Architectures and protocols for Internet
  - software-defined networking, network function virtualization, information centric networking, delay tolerant networking.
  - routing and traffic control technologies for large and complex networks, e.g., M2M network, P2P network and Internet-of-Things.
  - sensor network, vehicular network, data center network.
* Platform technologies on Internet
  - distributed computing, grid computing, cloud computing, social network, sensing network, bigdata/social data analysis platform.
  - cyber-physical system, test bed system.
* Network management methods and operation experiences for Internet
  - QoS/QoE support mechanisms, management methods for huge devices, access control technology.
  - guidelines according to trustworthiness, quality evaluation methods, and services.
  - copyright / proprietary rights management technology.
* New applications and services for smart society
  - smart society/smart city/smart grid applications, IoT applications, case studies of crowd sourcing/crowd funding/FinTech.
  - case studies involving implementations and experiments adapted to real environment
* New Internet technologies in accordance with the demand of society
  - privacy preserving technologies and institutional design adapted to social.
  - security technologies for multi-domain environment, e.g., authentication, authorization and accounting mechanisms for cloud/grid computing, and intrusion detection.
  - social activities support technologies.

2. Submission Instructions
The standard number of pages is 8. The page charges are considerably higher for extra pages. Manuscripts should be prepared according to the guideline in the "Information for Authors." The latest version is available at the web site, http://www.ieice.org/eng/shiori/mokuji_cs.html. The term for revising the manuscript after acknowledgement of conditional acceptance for this special section could be shorter than that for regular issues (60 days) because of the tight review schedule.

This special section will accept papers only by electronic submission. Submit a manuscript and electronic source files (TeX/Word files, figures, authors' photos and biographies) via the IEICE Web site https://review.ieice.org/regist/regist_baseinfo_e.aspx **by February. 20, 2017 (JST)**. Authors should choose the **Internet Technologies to Accelerate Smart Society** as a "Journal/Section" on the online screen. Do not choose [Regular-EB].

Contact Point:
   Daiki Nobayashi
   Kyushu Institute of Technology
    Tel: +81-93-884-3296, Email: ia-eb201801-sec@mail.ieice.org

3. Special Section Editorial Committee
Guest Editor-in-Chief: Masahiro Hiji (Tohoku Univ.)
Guest Editors: Daiki Nobayashi (Kyushu Inst. of tech.), Fumio Teraoka (Keio Univ.)
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------- Special Section on Recent Progress in Antennas and Propagation in Conjunction with Main Topics of ISAP2016 -------

The IEICE Transactions on Communications announces that it will publish a special section entitled "Special Section on Recent Progress in Antennas and Propagation in Conjunction with Main Topics of ISAP2016" in **February 2018.**

The objective of this special section is to discuss the antenna and propagation technologies related to progressing technologies for 5G mobile communication systems, MIMO, PAN/BAN, and wireless power transmission and so on. The 2016 International Symposium on Antennas and Propagation (ISAP2016) will be held in Ginowan, Okinawa, Japan during October 24 – 28, 2016, which aims at providing an international forum for exchanging information on such progress of research and development in antennas, propagation, electromagnetic wave theory, and the related fields. By taking this opportunity the special section has been planned to publish papers on advanced technologies in antennas, propagation and the related fields. The special section seeks for submission particularly from, but not limited to, the authors of ISAP2016.

1. Scope
This special section aims at timely dissemination of research in these areas. Possible topics include, but are not limited to:

Antennas	Propagation	Electromagnetic-wave Theory	AP-related Topics
- Small Antennas and RF Sensors	- Indoor and Mobile Propagation	- Computational Electromagnetics	- MIMO and Its Applications
- Antennas for Mobile and Wireless Applications	- Millimeter-wave, THz and Optical propagation	- Optimization Methods in EM Problems	- Antenna Systems for Mobile Communications
- Broadband and Multi-band Antennas	- Machine-to-Machine/Infrastructure Propagation	- Frequency Selective Surfaces and Filters	- Broadcasting and Receiving Technologies
- Tunable and Reconfigurable Antennas	- Channel Sounding and Channel Estimation	- EBG, Metamaterials, and Applications	- Wireless Power Transfer Technologies
- 2D and 3D Printed Antennas and Arrays	- Propagation Measurement Techniques	- Time-Domain Techniques	- Wearable Device Networks and Medical Applications
- Millimeter-wave, THz and Optical Antennas	- Terrestrial, Earth-Space, and Ionospheric Propagation	- Scattering, Diffraction, and RCS	- Sensor Networks and Adhoc Systems
- Active and On-Chip Antennas	- Propagation Fundamentals,	- Inverse and Imaging Techniques	- RFID and Applications,
- Adaptive and Smart Antennas	- DOA Estimation	- Passive and Active Components	- EMC/EMI Technologies
- Antenna Theory and Design	- Remote Sensing and Radar	- Nano-Electromagnetics	- Other related topics
- Antenna Measurements	- Other related topics	- Other related topics	
- Other related topics			

2. Submission Instructions
The standard number of pages is 8. The page charges are considerably higher for extra pages. Submissions of "letters" are not accepted. Manuscripts should be prepared according to the guideline in the "Information for Authors". The latest version is available at the web site, http://www.ieice.org/eng/shiori/mokuji_cs.html. The period for revising the manuscript after acknowledgement of conditional acceptance for this special section could be shorter than that for regular issues (60 days) because of the tight review schedule.

This special section will accept only papers by electronic submission. Submit a manuscript and electronic source files (LaTeX/Word files, figures, authors' photos and biography) via the IEICE Web site https://review.ieice.org/regist/regist_baseinfo_e.aspx **by February 15th, 2017 (JST)**. Authors should choose the Recent Progress in Antennas and Propagation in Conjunction with Main Topics of ISAP2016 as a "Journal/Section" on the online screen. Do not choose [Regular-EB].

Contact Person: Toru Takahashi
Information Technology R&D Center, Mitsubishi Electric Corporation
Tel: +81-467-41-2155, Email: ap_ac-isap2016ss@mail.ieice.org

3. Special Section Editorial Committee
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— Special Section on Network Resource Control and Management for IoT Services and Applications —

The IEICE Transactions on Communications announces that it will publish a special section entitled "Special Section on Network Resource Control and Management for IoT Services and Applications" in March 2018.

With the spread of Internet of Things (IoT) services and applications, the amount of traffic transmitted in several kinds of networks increases significantly and the traffic pattern also becomes more diversified than ever. For accommodating and processing such traffic, which is different from the existing traffic, it is indispensable to utilize an appropriate network resource control and management in several kinds of environments such as wireless access networks, wireless core networks, substrate networks, and cloud. Moreover, with the increase of battery-powered IoT devices, new control and management technologies that satisfy widespread requirements are expected in order to reduce the power consumption of the IoT devices and to decrease not only the processing load on the IoT devices but also the traffic load significantly. In addition, such new technologies must satisfy the requirements such that a huge number of IoT devices should be operated at low cost and with high efficiency, a huge amount of data should be processed at high speed and with high efficiency, and IoT services and applications should be developed in a safe and secure manner. Theoretical performance analysis, simulation/emulation experiments, and experimental evaluations are also important to deploy the technologies suitable for various IoT services and applications.

In order to further promote the above-mentioned researches for IoT services and applications, we thus call for publications (scheduled to appear in the March 2018 issue) to promote discussion and development of network resource control and management technologies including SDN, NFV, mobile edge computing (MEC), M2M/D2D, DTN, ICN/CCN, wireless network technologies, optical network technologies, LAA, cloud network, and so on. This special section solicits not only the standard regular papers but also position papers describing innovative ideas.

1. Scope
The scope of this special section includes, but is not limited to, the following topics:

- Software-defined networking (SDN)
- Network function virtualization (NFV)
- Network virtualization
- Mobile edge computing (MEC)
- Information/content centric networking (ICN/CCN)
- Machine-to-Machine (M2M)
- Device-to-Device (D2D)
- Delay/disruption/disaster tolerant networks (DTN)
- License Assisted Access (LAA)
- Network resource control
- Network resource management
- Fog computing
- Data center networking
- Optical network architecture
- Overlay networking
- Mobile networks
- Wireless sensor networks
- Environment monitoring networks
- Security / Privacy
- Inter-cloud networking
- RFID networking
- Device management
- Data offloading
- Performance analysis

2. Submission Instructions
The standard number of pages is 8 for a PAPER and 4 for a POSITION PAPER. Manuscripts should be prepared according to the guideline in the "Information for Authors." The latest version is available at the web site, http://www.ieice.org/eng/shiori/mokuji_cs.html. The term for revising the manuscript after acknowledgement of conditional acceptance for this special section could be shorter than that for regular issues (60 days) because of the tight review schedule.

This special section will accept papers only by electronic submission. Submit a manuscript and electronic source files (LaTeX/Word files, figures, authors' photos and biographies) via the IEICE Web site https://review.ieice.org/regist/regist_baseinfo_e.aspx by **27th March 2017** (JST). Authors should choose the "Network Resource Control and Management for IoT Services and Applications" as a "Journal/Section" on the online screen. Do not choose [Regular EB].

Contact point:
Takuji Tachibana
Graduate School of Engineering, University of Fukui
Tel: +81-776-27-9971
Email: ns-ss2017-kanji @mail.ieice.org

3. Special Section Editorial Committee
Guest Editor-in-Chief: Hideki Tode (Osaka Pref. Univ.)
Guest Editors: Kazuya Tsukamoto (Kyushu Inst. of Tech.), Takuji Tachibana (Univ. Fukui)
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------- Special Section on Optical Access System for Social Life -------

The IEICE Transactions on Communications announces that it will publish a special section entitled "Special Section on Optical Access System for Social Life" in the **April 2018** issue.

Since the FTTH (Fiber To The Home) service kicked into gear in Japan in 2001, optical access systems have kept on advancing as economical technologies which enable broadband services to be enjoyed easily in customer's homes, and FTTH has been taking root as an essential social infrastructure. Additionally, owing to standardization activities and overseas developments, the optical access technologies have been widely spread as international technologies which are employed not only in Japan.

On the other hand, a rapid development of mobile services is driving the drastic increase of the data traffic of mobile network, and evolution of optical access technologies is expected toward applications to mobile backhaul and mobile fronthaul of the 5G mobile network, the services of which are expected to start from 2020. Furthermore, new technologies supporting social infrastructure, such as M2M and IoT, have been discussed actively, and expectations for optical access technologies supporting these applications are increasing. To meet such expectations, it is increasingly important to establish optical access technologies which will be essential in future social life.

Because of such reasons, a special section is being planned (scheduled to appear in the April 2018 issue) to further promote research and development of technologies on optical access system for social life

1. Scope
This special section aims at timely dissemination of research in these areas. Possible topics related to optical access system include, but are not limited to:
- Access network architecture
- PON technologies   (QoS, DBA, Protection, Long-reach transmission, Low latency, Circuit emulation)
- Operation systems
- Video distribution in access network
- Optical-wireless convergence
- Optical access network for mobile network
- Network resilience
- Edge computing in access network
- Digital signal processing for optical access network
- Virtualization for optical access network
- Modulation formats
- Power saving
- Optical transceivers for access network
- Optical/Electronics devices for access network
- Applications across PON
- Impact of standardization

2. Submission Instructions
The standard number of pages is 8. The page charges are considerably higher for extra pages. Manuscripts should be prepared according to the guideline in the "Information for Authors." The latest version is available at the web site, http://www.ieice.org/eng/shiori/mokuji_cs.html. The term for revising the manuscript after acknowledgement of conditional acceptance for this special section could be shorter than that for regular issues (60 days) because of the tight review schedule.

This special section will accept papers only by electronic submission. Submit a manuscript and electronic source files (LaTeX/Word files, figures, authors' photos and biographies) via the IEICE Web site https://review.ieice.org/regist/regist_baseinfo_e.aspx by <u>May 15th, 2017 (JST)</u>. Authors should choose the Optical Access System for Social Life as a "Journal/Section" on the online screen. <u>Do not choose [Regular EB]</u>.

> **Contact point:**
> **Tomohiro Taniguchi, NTT**
> **Hiroaki Mukai, Mitsubishi Electric Corporation**
> **Tel: +81-46-859-2247, Fax: +81-46-859-5514, E-mail: eb-cs2018@mail.ieice.org**

3. Special Section Editorial Committee
Guest Editor-in-Chief: Jun Terada (NTT)
Guest Editors: Daisuke Umehara (Kyoto Institute of Technology), Hiroaki Mukai (Mitsubishi Electric Corporation), Tomohiro Taniguchi (NTT)
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┌───┐
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B (Communications)	EB (English) B (Japanese)	Fundamental Theories for Communications, Devices/Circuits for Communications, Transmission Systems and Transmission Equipment for Communications, Optical Fiber for Communications, Fiber−Optic Transmission for Communications, Switching for Communications, Switching for Mobile Communications, Network, Network Management/Operation, Internet, Wireless Communication Technologies, Terrestrial Radio Communications, Satellite Communications, Optical Wireless Communications, Antennas and Propagation, Electromagnetic Compatibility (EMC), Sensing, Navigation, Guidance and Control Systems, Energy in Electronics Communications, Terminals for Communications, Multimedia Systems for Communications, Broadcast Systems, Integrated Systems for Communications, Space Utilization Systems for Communications
C (Electronics)	EC (English) C (Japanese)	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 (English) D (Japanese)	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

Journal of IEICE (written in Japanese only)

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TEL   FAX   E-mail

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

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

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

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

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

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

Sister Society membership information

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

Sister Society:　　☐IEEE ComSoc　　　☐KICS　　　☐VDE-ITG

Membership number (Member): _____

Copy of Membership certificate or Membership card:

(Attached here)

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

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

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

Personal Information

☐Male
☐Female

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

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

Mailing Address   ☐Home ☐Office

_____
Name of Company/School/College   Department/Section

_____
Street   City   State/Province

_____
Postal code   Country

_____
TEL   FAX   E-mail

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

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

Application Information

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

*Society registration (Membership fee** includes one Society of Transaction of Online version.):*
☑B: Communications
**Discount rate *is applied to this IEICE-CS Sister Society Member's application.*

-- *Discount rate is not applied for the following optional items.* --
Additional Society (optional): ☐A: Engineering Sciences ☐C: Electronics ☐D: Information and Systems

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

Admission charge…………………………¥_____   Journal subscription (optional)………………..¥ _____
Annual charge…………………………… ¥_____   Mailing option: ☐Air mail……..……………..¥ _____
Additional Society (optional) …………… ¥_____   ☐SAL mail…………………..¥ _____
Total……………………………......……..¥ _____

Credit Card: ☐UC   ☐Master Card   ☐VISA   ☐JCB   ☐American Express

Card number: ☐☐☐☐ ☐☐☐☐ ☐☐☐☐ ☐☐☐☐

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

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

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

From Editor's Desk

● Season's greetings

IEICE General Conference will be held at Meijo University, Nagoya, March 22nd – 25th, 2017. Complete English sessions are also scheduled in the conference to promote globalizations of IEICE's academic activities.

By the way, Hitsumabushi is one of the most famous food in Nagoya. It is grilled eel on rice and has a unique style of how to eat. To begin with, you put grilled eel and rice into your bowl and taste as it is. Secondly, you again put the other grilled eel and rice into your bowl and enjoy with moderate wasabi and spice. Finally, you put remained grilled eel and rice into your bowl and pour green tea on it. This is what we call Japanese ochazuke. You will be satisfied because you can enjoy three different Japanese taste. Of course, there are a lot of delicious foods such as misokatsu, tebasaki, doteni and uiro.

We would like you to participate in the conference. Please check out the latest information on the IEICE web sight at:

http://www.toyoag.co.jp/ieice/E_G_top/e_g_top.html

IEICE-CS GLOBAL NEWSLETTER Editorial Staff

Editorial Staff of this issue

No special order is observed.

Moriya NAKAMURA
Meiji University
Department of Electronics and Bioinformatics, School of Science and Technology
Director, Planning and Member Activities, IEICE Communications Society

Manabu KAI
Fujitsu Laboratories, Ltd.
Network Systems Laboratory
Director, Planning and Member Activities, IEICE Communications Society

Takashi DATEKI
Fujitsu Laboratories, Ltd.
Network Systems Laboratory
Director, International Publication, IEICE Communications Society

ICO-24 JAPAN TOKYO 2016

The 24th Congress of the International Commission for Optics

TOKYO, JAPAN

Date : 21（Mon.）- 25（Fri.）August, 2017

Venue : Keio Plaza Hotel, Tokyo

ICO-24

The Congress of the International Commission for Optics（ICO）is the most important scientific and technical meeting on optics and photonics around the world.

Scope

1. Optical Design, Optical Materials, and Photo Lithography
2. Vision, Color, Display and Lighting
3. Optical Metrology
4. Optical Imaging and Optical Information Processing
5. Advanced Microscopy and Spectroscopy
6. Biomedical Optics/Photonics
7. Nonlinear Optics
8. Ultrafast Phenomena and Ultrafast Optics
9. High Power Lasers and Applications
10. X-ray and High-energy Optics
11. Microwave/Millimeterwave/THz Photonics
12. Near Field Optics, Plasmonics, and Metamaterials
13. Photonic Crystal, Nano Structures and Functions
14. Optoelectronics and Photonic Devices
15. Optical MEMS and Micro-optics
16. Quantum Optics and Atom Optics
17. Fiber Optics
18. Optical Communications and Photonic Network

Paper Deadline : 3 March, 2017

Conference Chairs

☐ General Chair : Y. Arakawa （Univ. of Tokyo）
☐ Program Committee Chair : S. Kawata （Osaka Univ.）
☐ Steering Committee Chair : T. Baba （Yokohama National Univ.）
☐ Fundraising Committee Chair : T. Yatagai （Utsunomiya Univ.）

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Optical Society of Japan (OSJ)

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http://ico24.org/

Secretariat - ICO24 : ico-24@or.knt.co.jp

IEICE Communications Society
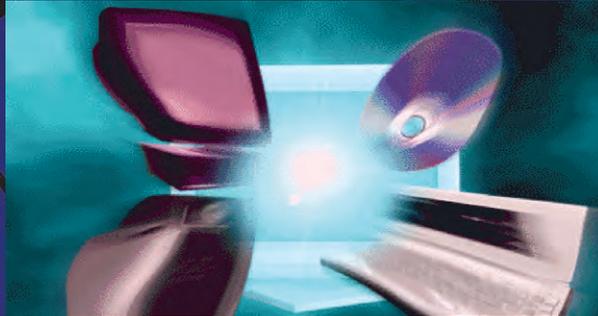
IEICE General Conference 2017

22-25 March 2017
Meijo University, Nagoya, Aichi

Every spring, the five Societies, together with the Human Communications Group, jointly hold a General Conference to provide a forum where members can present their study results and exchange views. Besides the presentation of papers, there are special IEICE events, conferment ceremonies of Young Investigators Awards, and social parties. The Communications Society holds English-language sessions as well. Considering submission of a paper to the Conference is greatly appreciated. Please check out the detail of paper submission and the latest information on the IEICE web site at:

http://www.toyoag.co.jp/ieice/E_G_top/e_g_top.html

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(*) Depending on material, IEICE membership account, password attached to proceedings DVD, etc. may be required to view PDF contents.