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Innovative Development,
Imagination for the Dream,
Identity & Diversity

Feature

The Future of Broadband Networks — The Convergence of Communications and Broadcasting

The Evolution of Broadband Changing the World

— Connecting People, Regions, and the World Beyond Time and Space —

Broadband was first introduced in Japan in the late 1990s as an Internet line capable of high-speed, high-capacity data communication. Today, anyone can comfortably use services that require processing large amounts of data, such as watching videos and playing online games.

Sumitomo Electric has been contributing to the adoption of broadband in Japan's access networks since the early days.

With the goal of achieving convergence of communications and broadcasting, Sumitomo Electric is pioneering a new world of broadband in three domains (network products, video products, and CATV systems) and has built strong partnerships with major domestic carriers and operators.

This article will take a closer look at the Broad Networks business (hereinafter, BNS business) and look ahead to the next generation of networks. A new world of networks is coming, where people, regions, and the world will be connected across time and space, and virtual reality will be experienced in a more realistic way.



Driving the Evolution of Broadband

— Essential Role of Information and Communication Networks in Social Infrastructure —

ADSL, the catalyst for the spread of the Internet

The origin of the BNS business dates back to the two-way optical CATV system, Hi-OVIS¹, which began operation in 1978. This was the world's first attempt to connect ordinary homes and public facilities via optical fiber to enable two-way video communication. The knowledge gained from this project was later applied to the network products business, video products business, and CATV systems business. In the late 1990s, as the Internet spread more widely in homes,

the demand for broadband access networks grew. Although ISDN² was being developed in Japan, it was not able to keep pace with the increasing richness of content. Efforts to establish FTTH³ were progressing simultaneously, but full implementation would take time. Sumitomo Electric believed that the advancement of broadband would lead to the creation of new services and content, thereby increasing demand for faster FTTH, and explored technologies to bridge the gap between ISDN and FTTH. Focusing on ADSL⁴ technology, the company commercialized ADSL equipment in 1997, leading Japan to the forefront of broadband access worldwide.

Development of GE-PON, the leading technology for FTTH

At that time, Wataru Kida, who is now the General Manager of the Broad Networks Division, was in charge of sales of broadband products, including ADSL. "We entered the access network market, capitalizing on our pioneering development of ADSL equipment. However, the market was dominated by

major telecommunications equipment manufacturers. In the telecommunications industry, we were viewed merely as an electrical wire manufacturer and as a maverick. A major turning point came when we developed GE-PON⁵ equipment, using the leading technology for FTTH at the time. We combined the technology we had accumulated in optical LAN, achievements in ADSL, and our technological capabilities as an optical components manufacturer to outcompete major telecommunications equipment manufacturers and secure the top market share. Furthermore, we developed 10G-EPON equipment, which offers 10 times the transmission capacity. We launched it into the market as a platform supporting high-definition video (4K) services and successfully achieved the top market share," said Kida.

Convergence of communications and broadcasting, moving towards all-IP

The BNS Division was established in 2014 through the partial merger of Sumitomo Electric Networks, Inc., which develops broadband equipment business, and Broad Net Mux

Corporation, which operates system integration business for CATV. The division aims to "expand its business in the convergence area of communications and broadcasting" through its comprehensive business of developing, manufacturing, and selling network products and video products for telecommunications carriers, as well as designing, constructing, and maintaining CATV systems. Recent achievements include the all-IP⁶ transition of communications and broadcasting. We constructed an IP multicast broadcasting system in an FTTH environment and demonstrated that it was possible to stably provide the same broadcasting service as the RF (radio frequency) system. The transition from RF to IP is anticipated to enable the transmission of high-definition 4K/8K video, the diversification and sophistication of broadcasting services, and the strengthening of networks while improving energy efficiency.

"As a symbol of the shift to IP, in 2008 we developed the world's first IP-STB⁷ compatible with IP retransmission of digital terrestrial television broadcasting, and in 2014, we developed the world's first IP-STB compatible with commercial 4K services and delivered it to telecommunications carriers. This was a pioneering step towards IP broadcasting services," said Kida.

Continuing to support evolving networks as social infrastructure

Broadband networks are expected to continue to evolve. For example, broadband networks enable the extended reality (XR) video streaming service, which combines the real and virtual worlds. Development of head-

mounted displays and XR glasses is also progressing, and new worlds that have never been experienced before are expected to be created.

"I believe that 3D, XR, the metaverse, and other technologies will not only provide entertainment but also contribute positively to society. Broadband networks can improve the convenience and comfort of people's lives and society, supporting autonomous driving, remote medical care, caregiving services, IoT, as well as generative AI. Networks are an indispensable aspect of social infrastructure, and we have a social responsibility to support them. We aim to continue contributing to the resolution of social issues by achieving networks that are high-speed, high-capacity, low-latency, and energy-efficient," said Kida.

In 2024, we celebrated the 10th anniversary of the launch of the BNS Division. The convergence of communications and broadcasting has progressed steadily. In the next chapter, we will explore the strengths of the three business areas within the BNS Division that have supported the convergence.

^{*1}: Highly Interactive Optical Visual Information System: a future-oriented project of the Ministry of International Trade and Industry carried out from 1978 to 1986.

^{*2}: Integrated Services Digital Network: a communication method that uses telephone lines to transmit digital signals for telephone and data communications.

^{*3}: Fiber To The Home: a connecting method that connects the service providers' facilities to each home using optical fiber.

^{*4}: Asymmetric Digital Subscriber Line: a digital data communications technology that enables high-speed Internet communications using regular analog telephone lines.

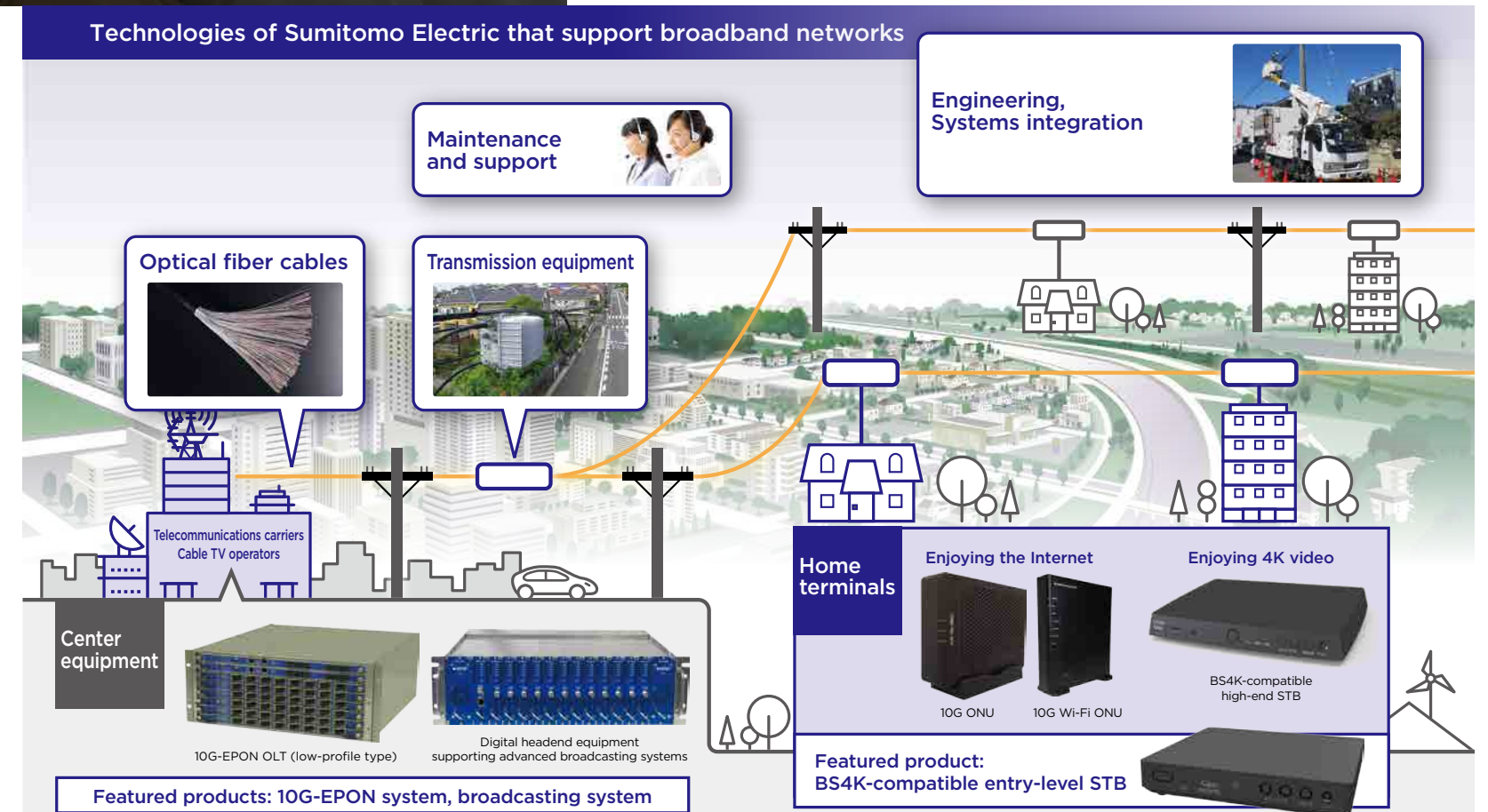
^{*5}: Gigabit Ethernet Passive Optical Network: a high-speed optical access method that uses optical fiber.

^{*6}: Internet Protocol: a communication protocol that governs data exchange over the Internet.

^{*7}: Set-Top Box: a terminal that receives broadcast signals and provides video content to a home TV.



Wataru Kida
General Manager, Broad Networks Division



Three Business Areas Supporting the Convergence of Communications and Broadcasting

— Their Strengths, Strategies, and Outlook —

Center equipment



10G-EPON OLT



IP broadcasting equipment

Transmission devices



R-OLT



R-PHY

Home terminals



10G Wi-Fi ONU

Home gateway

10G ONU



STB (set-top box)

Overwhelming development capabilities for high-speed, high-capacity 10G-EPON — Network Products Department

The mission of the network products business is to develop communications equipment for FTTH, which connects service providers' facilities to each home via optical fiber. Customers include major telecommunications carriers and power-related telecommunications carriers. The telecommunications equipment we handle includes 10G-EPON OLTs¹, which are installed in the facilities of telecommunications carriers, as well as terminal devices such as ONUs² and home gateways³, which are installed in end-user homes. The main product is the 10G-EPON OLT. The person behind its development is Hiroshi Murata, General Manager of the Network Products Department.

"We were among the first to anticipate the trend of high-speed upgrade from 1G to 10G for FTTH and were involved in the international standardization of 10G-EPON. We successfully brought the 10G-EPON

OLT to the market after developing ICs and devices and acquiring their intellectual property rights. Since then, we have maintained the top market share for 10G-EPON OLTs and other equipment that supports FTTH and have received high praise from customers," said Murata.

10G-EPON OLTs continue to maintain a high market share of approximately 70%. What is the reason for its strength?

"Our strengths are our technical capabilities in FTTH and our track record and experience spanning more than 20 years. Both the hardware and software for the facilities of telecommunications carriers are developed in-house, allowing us to meet the diverse needs of our customers. For example, we have the interconnection technology that connects other companies' ONUs to our OLTs. Customers can upgrade our OLTs

to new ones without replacing terminals on end users," said Murata.

What are the challenges and future strategies? "The first is to reduce electricity consumption in order to achieve carbon neutrality. Other challenges include increasing speeds to 25G and 50G, as well as increasing Wi-Fi speeds in the home. While tackling these challenges, we will collaborate with our R&D Group to advance specific initiatives aimed at realizing an APN⁴," said Murata.



Hiroshi Murata
General Manager, Network Products Department,
Broad Networks Division

Developing services using STB creates new value — Video Products Department

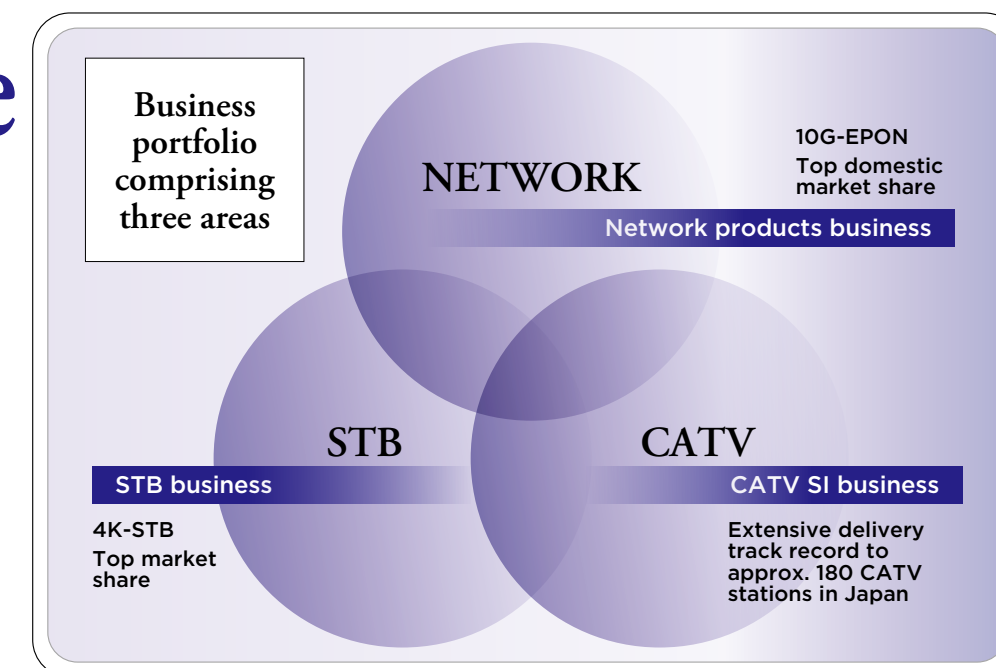
The Video Products Department operates a business centered on receiving terminals called set-top boxes (STB), which convert video signals sent from broadcasting stations, etc. into television signals. Digital high-definition broadcasting began on terrestrial television in 2003, but on the Internet, the problem of partial data loss (lost packets) became apparent. Sumitomo Electric, together with a Silicon Valley startup in which it has invested, developed an IP-STB incorporating FEC⁵, a function that recovers lost packets. This achieved the maintenance of the world's highest level of video quality at the time and successfully demonstrated low-latency, high-quality video transmission. Shinya Uemachi, General Manager of the Video Products Department, pointed out that Sumitomo Electric "has been leading the way."

"We commercialized the world's most powerful multi-channel capable and FEC-equipped IP-STB at the time. In 2008, with the spread of FTTH, we provided the world's first IP-STB compatible with IP retransmission of digital terrestrial television broadcasting, establishing our business. Since the commencement of advanced BS broadcasting in 2018, we have utilized our developed technology to commercialize a highly functional BS4K-compatible STB equipped with our proprietary middleware⁶ stbcore™ on Google™ Android TV™. This has enabled us to achieve the top market share in this field," said Uemachi.

The subsequent launch of a BS4K-compatible entry-level STB was challenging for the Video Products Department as it sought to further expand its market share. However, the



Shinya Uemachi
General Manager, Video Products Department,
Broad Networks Division



decline of TV viewership among young people is an urgent challenge.

"To address this challenge, we need to add new value to STBs in the future. As part of our efforts to create new services, we have begun collaborating with a company that provides remote tourism streaming services for the elderly or dependent people. Additionally, we have started validation testing of next-generation services for XR devices that take advantage of APN's low latency and wide bandwidth. We are also working on ideas for interactive robots integrated with STBs," said Uemachi.

One-stop service from development to sales to construction — CATV Systems Department

The CATV Systems Department operates a system integration business that covers the total design, construction, and maintenance of CATV equipment. Since 2000, in order to accommodate faster communications speeds, CATV networks have evolved from HFC⁷, which combines coaxial cable and optical fiber, to FTTC⁸, which lays optical fiber right up to the edges of buildings and homes, and then to FTTH, which connects base stations to each home via optical fiber. In recent years, FTTH deployment (photonics transition) has been implemented intensively across the country using government subsidies, and the department has successfully expanded sales of its flagship product, 10G-EPON OLT, and has secured the top market share.

"Currently, we are focusing on providing systems that improve the

convenience and maintainability of the expansive 10G-EPON product lineup. We offer a diverse lineup of products, including 10G-EPON management equipment with greater subscriber capacity, redundant systems that automatically switch to a backup system in the event of a failure, and terminals that enhance the home wireless environment. In our proposals for transitioning to photonics, we customize our suggestions to align with the renewal plans of CATV operators, such as gradual transition using DAA⁹ and solutions for apartment complexes where transitioning to photonics is difficult," said Hatanaka.

The success of a pilot project for an all-IP system should be noted.

"The all-IP transition using FTTH is a significant trend within the CATV industry, and we are proud to be leading the way in this technology. This transition to all-IP is expected to reduce equipment costs, optimize space, and reduce power consumption. We leverage our strengths in developing everything in-house, from center equipment to terminals for broadcasting and communications. Additionally, we offer a comprehensive one-stop service that includes installation. Our goal is to contribute to the development of information and communications infrastructure that supports the local community in collaboration with CATV operators," said Hatanaka.

*1: Abbreviation of Optical Line Terminal, which is installed at the carriers' offices

*2: Optical Network Unit: an optical line terminal installed on the subscriber's premises.

*3: A multi-function router, which includes a router, a telephone, Wi-Fi, and other functions all in one device.

*4: Abbreviation of All-Photonics Network, which is entirely based on optical technology.

*5: Forward Error Correction: a technique for detecting and correcting errors caused by imperfect transmission.

*6: Software that operates between the operating system (OS) and applications. It shortens development time and provides users with high-quality, diverse functions.

*7: Hybrid Fiber-Coaxial: a network made up of coaxial cables and optical fibers.

*8: Fiber To The Curb: a connection method that uses optical fiber to connect to the curb of the building.

*9: Distributed Access Architecture



Kazuma Hatanaka
General Manager, CATV Systems Department,
Broad Networks Division



Development in the Network Products Department



Meeting in the Video Products Department



Inspection in the CATV Systems Department

At the Forefront of Broadband

— Energy Efficiency of OLTs, Expanding Demand for STBs, and Innovations in Networks for CATV —

Initiatives to reduce power consumption —Network Products Department

The Network Products Department is currently focusing on reducing the power consumption of its equipment to help achieve carbon neutrality. FTTH, which connects every home with optical fiber, is already the mainstream in broadband service, but it involves a large number of installed devices that are always powered on, which presents significant potential for significant energy savings through power-saving measures. The flagship product targeted for power savings is the 10G-EPON OLT. Naoki Yoshitani, Manager of the 1st Hardware Development Group, has been working on equipment development as an OLT hardware engineer alongside the evolution of broadband networks.

“In developing a new energy-efficient OLT, we are working to reduce the size of OLTs for large urban stations by 50% or more, facilitating service expansion to smaller stations. A key factor in reducing power consumption is the scaling down of semiconductor chip features. This scaling allows for a lower voltage applied to internal transistors, leading to lower power consumption. We are working with vendors to implement advanced chips,” said Yoshitani.

Furthermore, additional power savings will be achieved by redesigning

the device structure and enhancing operational and cooling techniques. Various initiatives are being conducted in preparation for the release of a power-saving OLT, including the use of ICs (FPGAs^{*1}) that allow for flexible configuration to implement various functions as core components.

“We will continue to work on power conservation to contribute to our customers’ carbon neutrality and to the realization of the green society that our group envisions,” said Yoshitani.

Our own developed entry-level STB —Video Products Department

Hajime Iseki, Manager of the 2nd Software Development Group, has been in charge of STB software development since joining the company. The company’s proprietary common platform, stbcoreTM, is

middleware designed to provide the essential functions required for STBs, such as broadcast reception, recording and playback, and content distribution to mobile devices. By enhancing the compatibility of systems and services, it achieves these functions while also shortening STB development time and ensuring high quality.

“An outcome of stbcoreTM is our BS4K-compatible entry-level STB, which we launched in December 2023. Compared to current models, this model is specialized for watching and recording programs to achieve lower costs. Equipped with two tuners, the STB allows users to watch one program while recording another. We designed the user interface (UI), which directly influences user operability. We aimed to develop such a simple, easy-to-use, and quick-response UI that even first-time STB users would feel comfortable using,” said Iseki.

Hiroaki Konishi of the 2nd Technical Marketing Group emphasized the products we developed. As a sales technical representative, Konishi is responsible for negotiating with telecommunications carriers and for product development and launch.

“We have taken into account customer requests, but fundamentally it is a model that we have developed. In particular, the UI embodies our ideas. The challenge was to maintain high quality while also making it easy to use and keeping costs low. Going forward, taking advantage of the fact that approximately two million units, including those sold so far, have been installed in end users’ homes, we would like to explore new services that fit the lifestyles of our users,” said Konishi.

This model has been designed to accommodate the transition from B-CAS (C-CAS) cards inserted into televisions to ACAS chips integrated

directly into televisions or STBs, and it is expected to generate substantial upgrade demand as it is an ACAS-compatible STB.

Shift to distributed networks —CATV Systems Department

The Internet services offered by CATV operators include a system that communicates over HFC using CMTS^{*2} devices installed within the station’s premises (center) and cable modem terminals installed in the subscribers’ homes. In response to the growing demand for high-speed communication services, CATV operators are being forced to deal with the expensive installation and maintenance costs of CMTS devices, as well as the increased installation space and power consumption. One of the CATV Systems Department’s missions is to provide solutions to these issues.

Makoto Ito, Manager of the Communication Systems Development Group, pointed out that the key to tackling these issues is moving away from reliance on CMTS.

“We are working with Harmonic Inc. to propose a shift to a distributed network configuration called DAA. DAA reduces the load on the center facilities by installing some of the CMTS functions as an R-PHY unit on the pole-mounted transmission equipment, which also saves space and power,” said Ito.

Another feature is that by virtualizing the CMTS and managing it on a server, significant cost reductions and energy savings can be expected. In addition, to meet the demand for higher-speed services, the network can be upgraded to photonics by simply replacing R-PHY units with R-OLT units. DAA allows for photonics deployment to apartment complexes and a gradual transition in line with the expansion stage of FTTH.

“By distributing, virtualizing, and transitioning to a photonic architecture, we aim to solve issues faced by CATV operators and contribute to the evolution of cable networks,” said Ito.

^{*1}: Field-Programmable Gate Array: a programmable IC that integrates logic circuits and can realize a variety of functions by changing the internal circuit configuration depending on the application.
^{*2}: Cable Modem Termination System: a device installed in a CATV center to provide Internet services via CATV lines.



Naoki Yoshitani
Manager, 1st Hardware Development Group, Network Products Department, Broad Networks Division



Hajime Iseki
Manager, 2nd Software Development Group, Video Products Department, Broad Networks Division



Hiroaki Konishi
Assistant Manager, 2nd Technical Marketing Group, Video Products Department, Broad Networks Division



Makoto Ito
Manager, Communication Systems Development Group, CATV Systems Department, Broad Networks Division

Developing New Technology to Pave the Way to the Future of Broadband

Image: a future where all-photonics networks are being adopted

— All-Photonics Network for High-Speed, High-Capacity, Low-Latency, and Low-Power Consumption —

Next-generation communications infrastructure IOWN™ Concept

The Information Network R&D Center is the base for research and development of broadband networks. The primary theme in the optical systems domain is a next-generation network infrastructure initiative, the IOWN™ Concept. IOWN is the acronym for Innovative Optical and Wireless Network, aiming to realize innovative solutions in optical and wireless technologies. An international forum (IOWN Global Forum) was formed by major telecommunications carriers, electronics manufacturers, and IT companies, and Sumitomo Electric participated early on and has been playing a leading role in the forum. The core of the IOWN™ Concept is the realization of an All-Photonics Network (APN). This is a communications network that is connected entirely by optical signals, rather than conventional electrical signals. Kazutaka Kawamoto, General Manager of the Information

Network R&D Center, who has been involved in communications systems for over 20 years, pointed out the following:

“The advantages of the APN are power saving, high capacity, and low latency. Compared to conventional technology, it achieves 100 times greater power efficiency, 125 times greater transmission capacity, and 1/200th the delay between transmission and reception. The APN is expected to promote the resolution of social issues and the creation of new and innovative services and businesses, dramatically improving the safety, convenience, and comfort of our lives.”

Towards more realistic virtual reality

To realize an APN, the Information Network R&D Center is researching and developing optical modules, including APN transceivers and APN terminal devices, which send and receive optical signals. The APN transceivers will not only reduce the number of network devices by extending the optical transmission distance but also achieve power savings by integrating functions, such as remote control previously performed by rack-mounted devices into the compact transceivers. The APN terminal devices will seamlessly connect existing communications equipment to APN networks, enabling to convert entire networks to optical technologies.

“The APN will realize an ultra-low-power-consumption, ultra-high-capacity, and ultra-low-latency network

infrastructure, which will, for example, make the metaverse (virtual space) more realistic and in the future enable the use of real haptics (tactile and force transmission), holograms, and other technologies. By connecting people with each other and people with the world and everything else across time and space, it will be possible to create a safe, secure, and comfortable society. To achieve this, I believe it is necessary for our research departments to continue striving to develop innovative technologies,” said Kawamoto.

IOWN Global Forum

The IOWN Global Forum was established in 2020 as a private sector organization to develop IOWN technologies and use cases. As of October 2024, it is comprised of approximately 160 organizations. The objective of the IOWN Global Forum is to accelerate innovation and adoption of a new communication infrastructure to meet our future data and computing requirements through the development of new technologies, frameworks, specifications, and reference designs in areas such as photonics R&D, distributed computing, use cases, and best practices. For more information, visit <https://iowngf.org/>.



Kazutaka Kawamoto
General Manager, Information Network R&D Center



Development at the R&D Center

IOWN™ is a trademark or registered trademark of Nippon Telegraph and Telephone Corporation.



With collaborating members from MUIC and Sumitomo Electric (Shigeyuki Kurihara, CEO of Tokyo Travel Partners, is in the center front)



Filming a scene for Tabisuke TV™



Image: LET'S EXPO screen

To Realize “Universal Tourism”

— Virtual Travel Service Tabisuke TV™ and Expo 2025 Osaka, Kansai, Japan —



Remote tourism streaming service through collaboration between three companies

Currently, the development of a new service through co-creation is underway. It is a remote tourism streaming service provided by Tokyo Travel Partners Co., Ltd., Kansai Innovation Center, and Sumitomo Electric. Tokyo Travel Partners was established in 2016 with the aim of creating a society where people who use wheelchairs can enjoy traveling easily. Since then, it has been providing travel services for care facilities. In addition, for those who are unable to actually travel due to the COVID-19 pandemic, in 2021 it launched Tabisuke Channel, an audience-participation remote streaming service for nursing care, medical, and welfare facilities. The background to this is the existence of MUIC Kansai (hereinafter, MUIC), an innovation hub run by the Kansai Innovation Center. The first business venture to be launched was the Remote Tourism Platform project, with member companies Sumitomo Electric and Tokyo Travel Partners teaming up to develop the project. MUIC has provided various forms of support to the services planned and operated by

Tokyo Travel Partners from various perspectives, including their utilization at the Expo. Meanwhile, Sumitomo Electric is responsible for developing an Android TV™ app that can be enjoyed at home, as well as the web app and system. Tabisuke Channel was renamed Tabisuke TV™, which was launched in May 2024 with the aim of becoming a service that can be enjoyed by a general audience as well.

LET'S EXPO project launched

In preparation for Expo 2025 Osaka, Kansai, Japan, the Universal Tourism project LET'S EXPO has been launched, aiming to make travel safe and enjoyable for everyone. The project provides support for people who “want to visit but can't” in both real and virtual ways. Tokyo Travel Partners will stream live audience-participation online tours from the venue. Viewers can experience the tour by operating their TV remote control. The collaboration with Tokyo Travel

Partners is an attempt to add new value to the hardware, which will lead to increased value for users and the resolution of social issues. Shigeyuki Kurihara, CEO of Tokyo Travel Partners, has great expectations for LET'S EXPO.

“I believe that LET'S EXPO can have a major social impact. We hope that this opportunity will encourage many people to use Tabisuke TV™ and explore new possibilities for remote tourism. In Japan, an extremely aging society, we will work with Sumitomo Electric and MUIC to create new business possibilities using the TV platform,” said Kurihara.

LET'S EXPO is of great significance at the Expo. A project that allows people to experience the Expo from the comfort of their own home or their care facility will be a major force in promoting Universal Tourism, and Sumitomo Electric is playing a part in this project. The new experiences brought about by broadband networks will enrich people, society, and the world.

Tabisuke TV™
official website

<https://tabisuke.tv>
(Japanese)



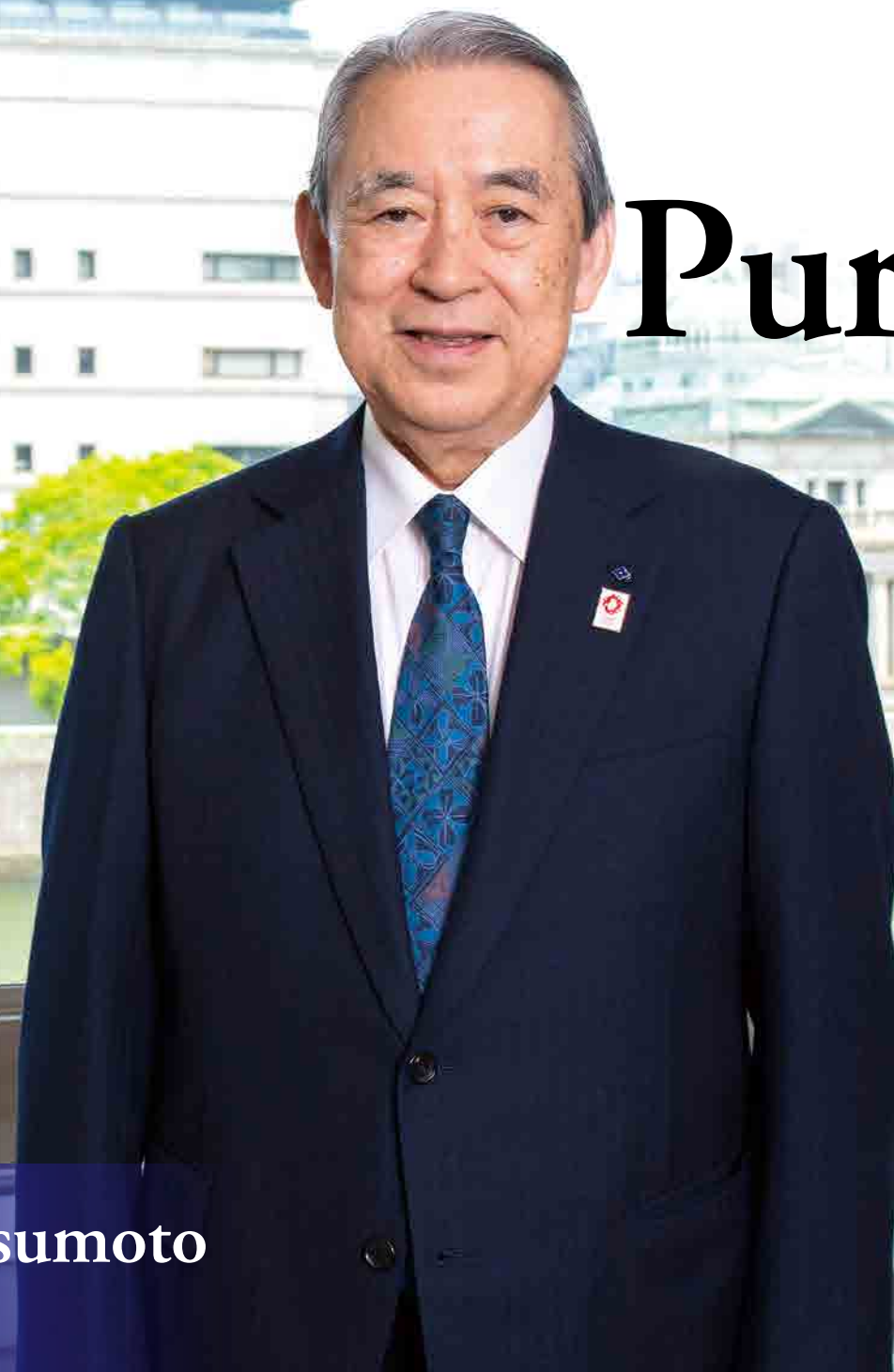
LET'S EXPO official website
<https://www.lets-expo.jp>
(Japanese)



Tabisuke, Tabisuke Channel, and Tabisuke TV are trademarks or registered trademarks of Tokyo Travel Partners Co., Ltd.

Sumitomo Electric's Pursuit of "Goho Yoshi"

— An Interview with Chairman Masayoshi Matsumoto on the Limitations of Shareholder Capitalism



Masayoshi Matsumoto

Chairman
Sumitomo Electric Industries, Ltd.

Sumitomo Electric promotes the "Goho Yoshi" (Five-Way Win) principle, which emphasizes the importance of all stakeholders—not just shareholders, but also employees, customers, suppliers, and regional communities. The ongoing Mid-term Management Plan 2025 sets quantitative targets for returning and distributing benefits to each stakeholder, and clarifies the responsibilities of management. The philosophy of pursuing the common good has long been rooted in the Kansai region's business custom, as seen in the Omi merchants' "Sanpo Yoshi" (Three-Way Satisfaction, advocating benefits to the seller, the buyer, and the local community) and in the Sumitomo Group's "Sumitomo Spirit." We spoke with Masayoshi Matsumoto, Chairman of Sumitomo Electric and the Kansai Economic Federation, to understand why this philosophy is so crucial today.

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Fair Profit Distribution for All Stakeholders

— Sumitomo Electric champions the Goho Yoshi concept, which focuses on fair distribution of profits to all stakeholders.

The concept of Goho Yoshi is multistakeholder capitalism, the opposite of "shareholder capitalism," which aims to maximize shareholder profits. The Kansai business community has long been guided by the spirit of Sanpo Yoshi (Three-Way Satisfaction), and Goho Yoshi (Five-Way Win) is a modern reworking of this concept.

In the U.S., where shareholder capitalism is prevalent, its negative effects have recently become more evident. The relentless pursuit of short-term profits has contributed to growing income inequality, the rise of populism, and social

instability. In response to these issues, the Business Roundtable, a group of major U.S. corporate leaders, released a statement in 2019 emphasizing the importance of focusing on five key stakeholders: customers, employees, suppliers, communities, and shareholders. This shift toward Goho Yoshi thinking, even in the heart of shareholder capitalism, is a significant change.

Looking at Japan, since the 1980s, wages have remained stagnant, and corporate capital expenditures have been sluggish. Meanwhile, shareholder returns, such as dividends

and stock buybacks, have increased—completely opposite to the spirit that Kansai's business community has fostered for so long. The influence of American-style shareholder capitalism is undeniable. If we do not return to the Goho Yoshi principle, Japan could fall into populism and face social instability.





Quantitative Targets: A 40% Dividend Payout Ratio

— How exactly does Goho Yoshi translate into business operations?

Since taking on the role of Chairman of the Kansai Economic Federation in 2017, I have urged the Kansai business community to adopt this philosophy as a management principle. However, to ensure effective implementation, we need more than a qualitative understanding—we need quantitative benchmarks. Leading by example, Sumitomo Electric has set specific numerical targets in its Mid-term Management Plan 2025 for how benefits will be allocated to all the stakeholders. By laying out these figures, we have made the management's responsibility clear.

For employees, we have committed to wage increases that exceed the inflation rate, a target we have also declared to the labor union. Japan's prolonged economic stagnation has been largely due to the decline in personal consumption, which accounts for 60% of GDP. If wages rise above inflation, consumption will follow suit.

For local communities, we have pledged to allocate 1% of our profit after-tax to social contribution activities. These include donations to cultural, arts, sports, and environmental preservation initiatives, such as the Tenjin Festival and the Osaka Marathon. We are also contributing significantly to the 2025 World Expo in Osaka, purchasing 300,000 tickets to support the event.

We have not neglected our shareholders either. We aim for a dividend payout ratio of 40%, which is considerably higher than the average of around 30% for listed companies. For fiscal year 2023, we paid an annual dividend of ¥77 per share, resulting in a payout ratio of 40.1%, up 5.5 points from the previous fiscal year. Our total dividend payout increased by over ¥20 billion, reaching ¥60.1 billion.

The Monjuin Shiigaki: Sumitomo's Legacy of Ethical Business

The Monjuin Shiigaki was left by Masatomo Sumitomo, the founder of Sumitomo, in the mid-17th century. It contains five guiding principles for conducting business, beginning with "Banji-nissei," meaning to dedicate oneself fully to all matters. This business philosophy has been passed down through generations and remains the shared management ethos of the Sumitomo Group today.

(Preserved in the Sumitomo Historical Archives.)



Sumitomo Electric's Pursuit of "Goho Yoshi"

Sustainable Management over Short-term Profits

— What is the most important principle when advancing Goho Yoshi?

This is embodied in the concept of "Fusu-furi"—a commitment to avoid pursuing short-term or easy profits. The Sumitomo Group has inherited the Sumitomo Spirit, a business philosophy rooted in the Monjuin Shiigaki, which were guidelines left by the founder of Sumitomo, Masatomo Sumitomo, in the mid-17th century. This philosophy is built on three core principles: "Banji-nissei" (do your sincere best in not only business but also every aspect of your life), "Shinyo-kakujitsu" (place importance on integrity and sound management), and "Fusu-furi" (do not act rashly or carelessly in pursuit of immoral business). Together, these ideas form the foundation of the Goho Yoshi approach.

Banji-nissei teaches that individuals should commit wholeheartedly to their work, focusing on personal growth and character development, rather than merely pursuing profit. Each president of Sumitomo's key companies receives a copy of the Monjuin Shiigaki from the head of the Sumitomo family and is expected to lead in accordance with these values. I keep a copy in my office and reflect on its principles daily as part of my morning routine.

We have once learned a hard lesson from straying away from the Sumitomo Spirit. In 2009, a cartel involving optical fiber cables was uncovered, taking seven years for us to resolve the issue. Had we adhered to our business philosophy, this situation would never have occurred. This experience reaffirmed the importance of Sumitomo's long-standing values. In management, there are things that should change and others that must remain constant. The Sumitomo Spirit is

one of those constants, and is essential to ensuring the company's sustainability.

Management must lead based on strong ethical values, and at the heart of those values is Goho Yoshi. Increasing dividends or stock buybacks just to please shareholders is not the way forward. A leader focused on personal bonuses through stock options and luxury items cannot effectively lead a large workforce. I want all 290,000 employees of the Sumitomo Electric Group to enjoy a fulfilling work life. The same applies to our shareholders. The pioneers who built the Sumitomo conglomerate led humble lives. They prioritized contributing to society and ensuring the happiness of their employees over accumulating personal wealth.



Japan's Unique Approach to Capitalism

— There is growing pressure in the capital markets to prioritize shareholders.

My mentors, Professors Shigeto Tsuru and Eisuke Yoshinaga, taught me to always remember the concept of "captains of industry" if I entered the business world. This idea, from a chapter in "Past and Present" by the Victorian era writer Thomas Carlyle, promotes public-interest capitalism. It rejects profit-driven management and emphasizes compassionate, ethical leadership—values that align with the Sumitomo Spirit. When I became an executive, I committed to this approach, and it remains a core principle in my role as president and chairman.

According to Professor Shinichi Hirota of Waseda University, capitalism can generally be categorized into two types: Liberal Market Economies (LME), which emphasize economic efficiency and often prioritize shareholders, and

Coordinated Market Economies (CME), which place a stronger focus on social equity and balancing the interests of all stakeholders. Companies in the U.S. and U.K. typically follow the LME model, while many European companies are more closely associated with the CME approach. Japan has historically aligned with the CME model, but since the 2000s, there has been growing discussion about adopting more shareholder-focused management practices. While global trends have influenced this shift, I believe Japan should embrace a form of capitalism that reflects its own unique values and traditions.

Please see the website for more details. →



A Place Related to Sumitomo's History

The International Exposition, Tsukuba, Japan 1985

Dwellings and Surroundings — Science and Technology for Man at Home



Our products and technologies were featured at the International Exposition, Tsukuba, Japan, 1985.

In 1985, the International Exposition, Tsukuba, Japan, 1985 (Expo 1985 Tsukuba) was held for 184 days. The theme was “Dwellings and Surroundings – Science and Technology for Man at Home.”

A humanoid “keyboard instrument-playing robot” created by our company was exhibited at the Japanese government’s Theme Pavilion. The robot, possessing human-like intellectual abilities, such as seeing, hearing, and speaking, could converse with the operator. It amazed visitors by playing pre-recorded songs and reading sheet music and performing exactly as written. The robot is currently on display at the Tsukuba Expo Center.

Additionally, we jointly developed a maglev train, which was then called the “future mode of



Keyboard instrument-playing robot



Maglev train

transportation” or the “modern flying carpet.” During the session, this train carried approximately 610,000 passengers and traveled a total of 8,000 km without

any accidents. After the event, the maglev train was transported by ship across the Pacific Ocean and was also showcased at the 1986 World Exposition on Transportation and Communication held in Vancouver, Canada.

In 2025, the World Expo will be held again in Osaka, Kansai (April 13 to October 13, 2025), with the theme of “Designing Future Society for Our Lives.”

Scan here for the Sumitomo Pavilion
at Expo 2025 Osaka, Kansai, Japan



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are found on the “id” special site

<https://sumitomoelectric.com/id>



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