New Breeze

Quarterly of The ITU Association of Japan

New Year Messages

From the Minister for Internal Affairs and Communications, Secretary-General of ITU, President of ITU-AJ

Special Feature

Trends in the Music Rights Business

Introduction to the KENDRIX Copyright Protection System Using Blockchain, eKYC, and Music Recognition Technologies

Rights of Music Creators: Current State and Issues

Services for Music Creators through SoundOn

OIKOS MUSIC Supports Sustainable Musical Activities

Editorial Committee

Letters to *New Breeze*

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C O N T E N T S

About ITU-AJ

The ITU Association of Japan (ITU-AJ) was founded on September 1, 1971, to coordinate Japanese activities in the telecommunication and broadcasting sectors with international activities. Today, the principle activities of the ITU-AJ are to cooperate in various activities of international organizations such as the ITU and to disseminate information about them. The Association also aims to help developing countries by supporting technical assistance, as well as by taking part in general international cooperation, mainly through the Asia-Pacific Telecommunity (APT), so as to contribute to the advance of the telecommunications and broadcasting throughout the world.

2025 MIC Minister's New Year's Greeting

Seiichiro Murakami
Minister of Internal Affairs and Communications

Happy New Year!

In October last year, I was appointed Minister of International Affairs and Communications.

As the Minister of Internal Affairs and Communications, I am in charge of a field that is closely related to the lives of citizens. I would like to say a few words about the directions of the policies on which we are focusing our efforts.

Securing safety and security for citizens and residents

We are working to secure safety and security for citizens and residents of Japan, drawing on lessons learned from the Noto earthquake, which occurred at the beginning of last year.

To build an environment that can deliver information reliably, even during a disaster, we are collaborating in the private and public sectors, to strengthen communications and broadcasting infrastructure, such as mobile phone base stations and cable television networks, and to systematically consolidate measures to secure communications and understand conditions in disaster-hit areas.

We are also promoting advanced digital infrastructure, including completion of both urban and regional 5G networks, optical fiber in remote areas, distribution of data centers through regional areas, expansion of undersea cables and non-terrestrial networks, and completion of communications environments that will support early introduction of automated driving vehicles.

We are continuing to examine telecommunications policy from the perspective of citizens and users, including the NTT Act, which privatized the formerly public Nippon Telegraph and Telephone Public Corporation in 1985, in the four areas of universal services, fair competition, economic security and international competitiveness.

Considering the dramatically increasing use of radio waves in socio-economic activity, we also have initiatives studying the introduction of new ways to allocate frequencies.

We are working to improve the reliability of "L Alert," which distributes disaster information, and to strengthen links with other disaster-prevention systems.

Promoting digital transformation (DX)

To maximize utilization of digital technologies, we are promoting DX in regional organizations and society and also securing and training personnel to support that effort.

To realize a sustainable regional society using DX, we are supporting work with AI and other digital technologies to find solutions to regional issues, to create positive precedents for regional creativity and to expand them horizontally.

Consolidating a reliable information and communications environment

The circulation and spread of disinformation, misinformation, online harassment, and information that violates rights on the internet is becoming a serious issue. We are working to enforce the Information Distribution Platform Act, which was established last year, as soon as possible.

We are also promoting comprehensive measures such as R&D and international cooperation on technologies to improve user literacy and deal with misinformation and disinformation.

We are further examining what broadcasting and systems should be like in the future, from the perspective of what sort of sustainable role it can have in society, including satisfying rights such as the public right to know and privileges to which citizens are accustomed.

We are working to strengthen cyber-security measures, including strengthening security of IoT devices, training personnel and advancing data analysis.

Promoting stronger international collaboration

We are also promoting stronger international collaboration.

In AI, Japan is leading the creation of international rules, and based on the results of the first internationally endorsed comprehensive policy framework, the Hiroshima AI Process, we will continue to contribute to adding countries and regions that support the process and enterprises and other organizations that commit to implementation of the process code of conduct.

In research and development and deploying their results in society, we continue to strengthen systems and programs of the National Institute of Information and Communications Technology (NICT), to put it at the core of collaboration among industry, academia, and government.

We will also strengthen AI development capabilities by consolidating and expanding the high-quality Japanese language AI training data held by NICT and providing it to Japanese businesses and other entities.

To promote the safe development, provision and use of generative AI, we will broadly build awareness regarding guidelines created last year, both domestically and internationally.

We are promoting research and development and international standardization of advanced technologies that will support integration of AI into society, with a view to implement them in society and expand them overseas, including all-photonics networks, space communications, quantum encrypted communications and other next-generation information and communications infrastructure.

We are collaborating closely with international organizations such as the International Telecommunications Union (ITU) and the Asia-Pacific Telecommunity (APT), in which executives from Japan are actively working.

We are strengthening international collaboration to build safe and robust digital infrastructure and expand this infrastructure overseas with technologies such as 5G and optical networks.

Conclusion

In conclusion, I offer my wishes for health and happiness to you all in the New Year.

ITU New Year Message for New Breeze magazine, ITU Association of Japan

Doreen Bogdan-Martin
Secretary-General
International Telecommunication Union

I am honoured and delighted to extend my New Year greetings for 2025 to all the members of the ITU Association of Japan.

The International Telecommunication Union (ITU) looks forward to another year of working together with all of you. Our shared quest is to extend the benefits of digital technologies to everyone, everywhere, and make the dawning digital age sustainable and prosperous for all.

I say this, unfortunately, amid high geopolitical tensions, acute economic and job concerns, and precarious food security for much of the world. Nor can we ignore droughts, floods, fires, and severe storms, with almost every month in 2024 breaking new temperature records.

While the dangers we face could dishearten us, they have instead deepened our resolve. Digital technologies give us the tools to tackle the world's most pressing challenges. Artificial intelligence (AI) alone can help accelerate progress on nearly 80 per cent of United Nations targets under the Sustainable Development Goals – a prospect that drives us to step up ITU's vital contribution as the UN agency for digital technologies.

The Global Digital Compact, recently adopted at the UN General Assembly, recognizes the need for technology solutions to reinvigorate sustainable development.

Our recent ITU World Telecommunication Standardization Assembly (WTSA-24) reaffirmed the importance of strong international technical standards, with new resolutions in key areas ranging from AI to sustainable digital transformation, digital public infrastructure, and emergency communications. In parallel, we will keep enhancing global digital cooperation through our diverse multi-stakeholder World Summit on the Information Society (WSIS) and AI for Good communities.

So much remains to be done. Still, today, approximately one-third of humanity is offline, while countless others struggle with inadequate connections, unaffordable access, the lack of relevant content in their own languages, and privacy and safety concerns.

But let's start 2025 with reflections on how far we have come together.

ITU will mark its 160th anniversary this year. For 146 of those years, Japan has stood as a vital partner in our extraordinary journey of technological innovation and progress.

The ITU Association of Japan started in 1971 – when fixed-line telephone access was our top issue. Now, with the space economy, quantum computing and AI, we are stepping into a new era.

As UN Secretary-General António Guterres emphasized during his historic visit to our headquarters in Geneva in June: "ITU's technical expertise and commitment to collaboration are the very qualities our world needs as we navigate a new digital age."

More than ever, the world depends on ITU's radiocommunication, standardization and development work – to embrace this new chapter and bring the benefits of digital technologies to everyone around the world.

Japan, its industry players, and, of course, the ITU Association of Japan play a critical role in helping us build a more connected, safe, and sustainable digital future.

The support of Japan, as one of our biggest budget contributors, enables us to help developing countries upgrade their technical and regulatory capacity. Together, we are making a real difference in bridging the standardization gap.

The Japanese digital community is also our partner in exploring ethics and governance questions on new and emerging technologies like AI.

Notably, the Government of Japan has helped us step up the Green Digital Action initiative, rallying tech companies, industry associations, financing institutions, UN agencies, and other key organizations in a push to rein in tech-related greenhouse gas emissions, manage electronic waste, and leverage telecom infrastructure to boost environmental resilience.

52 companies, universities, research institutes, associations and other organisations from Japan support initiatives across all three sectors of ITU's work. I extend my most sincere gratitude to Japan for its unwavering commitment and support.

All of us at ITU look forward to deepening our collaboration with you as we work towards implementing the Global Digital Compact, particularly in aligning its outcomes with the upcoming WSIS+20 review in 2025.

The actions we take together this year will lay the foundation for the future – not just for ourselves, but for generations to come.

I look forward to another year of constructive collaboration with my fellow elected officials on ITU's leadership team, including distinguished engineer Seizo Onoe-san, our Director of Telecommunication Standardization, as we all seek new ways to advance the power of technologies and connectivity to make the world better for everyone, everywhere.

We also look forward to sharing our work with the Japanese people – and indeed the world – as part of the United Nations Pavilion for EXPO 2025 in Osaka.

I wish all members of the ITU Association of Japan a very happy and prosperous New Year. May this year, and the many years to come, be prosperous, progressive, and peaceful for all.

New Year's Message

Hiroshi Yoshida
President
The ITU Association of Japan

Best wishes for the New Year! New Year's Day in 2024 brought the earthquake on the Noto peninsula, causing enormous damage. Even now, we continue to pray for recovery efforts and a return to regular life. Then, on January 2, there was an airline accident at Haneda Airport, which was a powerful reminder that unexpected conditions can arise in systems composed of advanced technologies, and safety must be the highest priority.

Internationally, the Olympics were held in Paris, Russia's invasion of Ukraine expanded, strife in the middle-east intensified, and the year was consumed with activity to resolve conflicts and restore peace to society. We need to continue on this path toward peace, based on our human wisdom and intelligence.

Reviewing our meetings with the International Telecommunications Union (ITU) in 2024, ITU-T SG9 held the last meeting of this session Sept. 2 to 10 in Otemachi, Tokyo. There were approximately 90 participants deliberating on various issues. On the final day, a joint workshop was held between SG9 and SG16, anticipating their amalgamation at WTSA-24 in October.

The World Telecommunication Standardization Assembly (WTSA-24) was held from October 15 to 24 in New Delhi, India, where the study group amalgamation (SG9 and SG16) proposed by Japan was agreed upon, establishing SG21. The chairperson and seven vice-chairpersons from Japan were also appointed. We pray for their activities in these positions. The ITU-AJ supported administration of these meetings.

Other ITC events included the first "Digital Academy", held December 2 to 6 in Takeshiba, Tokyo, with the World Bank taking the lead. There were approximately 80 participants, with lectures, discussions and technical visits for sessions based on themes faced by the Asia-Pacific region. ITU-AJ also provided support for this assembly.

Within the ITU-AJ, we held our annual "World Telecommunication and Information Society" ceremony on May 17 at the Keio Plaza Hotel. At the ceremony, the Minister of Internal Affairs and Communications Award was presented to Yukihiro Nishida (NHK), who worked for many years as vice-chairman of ITU-R SG6 (2007-2015) and chairman (2015-2023), contributing to International Standardization of broadcasting technology and anticipating the future of broadcasting. A special award was also given to Dr. Maki Sugimoto (Holoeyes Inc., Teikyo University), for his work applying ICT in the medical-surgical field, actively advancing application of the latest XR, VR, AR and MR technologies for use in surgery. A further eight people and one organization received accomplishment awards, and 15 people received encouragement awards. Hearty congratulations to all of them!

The APT training office held a network planning course aimed at eliminating the digital divide from October 24 to November 1 in Shinjuku, Tokyo, with 13 participants from nine countries.

Regarding ITU meetings in 2025, ITU-R WP5D will be held in Kobe in June and July. Then, in November, the World Telecommunication Development Conference (WTDC-25) will be held in Baku, Azerbaijan. The ITU-AJ will continue to collaborate actively with relevant parties on ITU and APT assemblies and events, based on our past experience.

In March, the Mobile World Congress (MWC-25) will be held in Barcelona Spain, and the ITU-AJ will support Japanese enterprises with pavilion exhibits.

Within the ITU-AJ, we will continue operation of our Platform for Driving Digital Development Overseas, which began in 2020. By also publishing the online monthly, "ITU Journal," and the English quarterly, "New Breeze," by inviting experts to speak at research conferences, and holding informational meetings gathering a cross-section of people involved in ITU-related businesses, the ITU-AJ will continue collaboration to provide a platform for interaction among the ITU, the APT, the Japanese government, and each of the supporting members.

I wish you all a sincere Happy New Year and good health in the coming year.

■ **WTSA-24 New Delhi**

Introduction to the KENDRIX Copyright Protection System Using Blockchain, eKYC, and Music Recognition Technologies
—Protecting the Rights of Music Creators—

Hidehiko Mizutani
Planning Department
Japanese Society for Rights of Authors, Composers and Publishers (JASRAC)

1. What is KENDRIX?

KENDRIX is the name of a musical works information management system equipped with a proof of existence (PoE) function using blockchain technology. It targets all sorts of individual music creators whether amateurs or professionals. The key message behind KENDRIX is "Toward a world where every creator can take part in a creation ecosystem" as reflected by a key visual undertaken by the illustrator Yusuke Nakamura (Figure 1). As an anagram consisting of the letters KENRI (where kenri is the Japanese word for rights) and DX (digital transformation), the name "KENDRIX" is a coined word based on the concept of promoting the digital transformation of copyright management (Figure 2).

A closed β-version of KENDRIX was released on June 28, 2022 and tested by a number of music creators invited by JASRAC as test users. It was released for public use on October 31, 2022 after making modifications and improvements based on reviews and feedback submitted by these test users.

KENDRIX allows the following functions to be used by anyone free of charge by simply registering an active name (real name or pen name) together with an e-mail address and password.

■ **Figure 1: KENDRIX key visual**

■ **Figure 2: KENDRIX logo**

1.1 Blockchain-based PoE

When uploading an audio file of a musical work to KENDRIX, the hash values of several types of information such as the user ID and audio file are registered together with a time stamp on the blockchain. Then, by setting a PoE page that includes the above information to "public," a URL for public use can be issued and date-and-time information related to the existence (possession) of a copyrighted work can be presented to a third party (Figure 3).

On releasing a musical work to a user-generated content (UGC) service, social networking service (SNS), etc., attaching the public URL of the PoE page can convey to a third party that there is a music creator that has obtained PoE by KENDRIX, which should deter unauthorized use of that musical work.

■ **Figure 3: PoE page (sample)**

In KENDRIX, multiple audio files can be registered as "versions" of a single musical work. To stand up to a third party in the event of a conflict, it is recommended that PoE of an audio file be obtained from the pre-completion stage (during the creation process).

1.2 ID verification by eKYC

Although a music creator can begin to use KENDRIX by simply registering an active name together with an e-mail address and password, using the eKYC service on registering personal information enables an ID verification to be performed with respect to the music creator. It has become common for many music creators to carry out their activities using pen names instead of their real names, but when it comes time to exercise one's copyright, it is surprisingly difficult to objectively link one's activities under one's pen name even if one's real name has been made clear out of necessity. In actuality, there are not a few music creators who have encountered problems with impersonators (identity theft).

Additionally, even if the name of the releasing author on the KENDRIX PoE page is a pen name, performing an ID verification of that music creator on the KENDRIX side will increase the reliability of that information.

It has also become possible to conclude a trust contract for entrusting JASRAC with the management of one's own copyrights online via KENDRIX, and identity verification in this online process makes use of eKYC. The plan going forward is to expand coordination with music-related services to make it easy for a music creator whose ID verification has been completed to use those services.

1.3 Information sharing with co-creators (project function)

KENDRIX recommends that PoE of an audio file be obtained from the pre-completion stage (during the creation process). Here, to enable KENDRIX to be used even if multiple individuals are dividing up the work of creating a musical work, a function has been implemented for inviting other KENDRIX users to musical work information registered by a music creator so that all concerned can reference the same information. This is called the "project function," which enables invited users to add new audio files (versions) and to exchange comments on each version as project members.

Furthermore, provided that the user (owner) that initially registered the musical work information has concluded a trust contract with JASRAC, the owner can submit a work notification from KENDRIX to JASRAC. At that time, project members will also be notified of that fact by e-mail so that they can check the contents of that work notification on KENDRIX. This mechanism heightens transparency so that no copyright-related problems occur even among fellow co-creators.

1.4 Audio-file check function

A function has been implemented using audio fingerprinting technology to analyze audio files registered on KENDRIX and introduce existing musical works that have the possibility of being similar.

Although audio fingerprinting is generally applied to identify musical works used in television programs, movies, and other media, it can be used on KENDRIX for the following purposes before releasing a newly created musical work.

・Check whether part of an existing musical work has unintentionally been mixed in (for example, sample material obtained as free material turns out to be part of an existing musical work).
・Check whether a melody has a close resemblance to an existing musical work.

This function uses "Music Recognition" and "Cover Song Identification" solutions provided by ACRCloud. The purpose of Music Recognition is to discover use of that original audio file while that of Cover Song Identification is to find cover versions of the original musical work.

1.5 IPI number application function

A function is provided to enable a music creator who has not concluded a trust contract with JASRAC to obtain an Interested Parties Information Number (IPI number) via KENDRIX.

An IPI number is an international identifier assigned to authors, composers, etc. for identifying a copyright holder. This IPI number is conferred when a rights management organization like JASRAC in a certain country registers a copyright holder in an international database of rights holders. For this reason, a music creator who has concluded a trust contract with JASRAC can definitely obtain an IPI number.

There is also an International Standard Musical Work Code (ISWC) that acts as an international identifier for musical works. A rights management organization like JASRAC in a certain country that wishes to register musical work information in an international database of rights holders called CISNet and be granted an ISWC must provide the IPI numbers of all of the authors of that musical work.

When a music creator that obtains and confirms one's own IPI number beforehand and conveys that number to domestic or international music publishers, co-creators, etc., the implication is that an ISWC can definitely be issued, which increases the possibility that one's own musical work will be easily identified in an international copyright management network. For example, even if a trust contract hasn't been concluded with JASRAC, an IP number can be obtained with this function as long as ID verification can be performed though eKYC on KENDRIX.

Additionally, while a user can begin using KENDRIX by simply registering an active name plus an e-mail address and

password as described above, everyone starts with a "basic" account. Then, if registering one's real name, address, etc. and performing ID verification by eKYC, this account will be automatically upgraded to a "business account," and if concluding a trust contract with JASRAC, the account will be upgraded to a "business+" account. Registering a copyright holder in the IPI system requires information such as the music creator's real name and pen name, date of birth, etc., so the IPI number application function can only be used by users with a "business" account or higher.

2. JASRAC and Blockchain/KENDRIX

JASRAC's involvement with blockchain technology began in 2017 when it was being said, "With blockchain, there will be no need for JASRAC."

Incidentally, in a book promoting the business use of blockchain technology published in 2018, JASRAC was specifically mentioned in a chapter titled "Music Copyrights" as "possibly becoming unnecessary owing to blockchain."

I have supervised a department in charge of data analysis and research at JASRAC. In this capacity, I have fed back any technologies, services, or approaches that might be beneficial to JASRAC to people within the company and made presentations on specific methods of using them. I have also compiled reports on blockchain technology while exchanging information with a variety of experts. Beginning with explanations of technical features such as making remittances via a wallet in bitcoin, Proof of Work mechanisms, etc., I have listed trends in generalizing blockchain technology and applying it to business using examples. One such example is the sequence of recording the transfer of numerical values as in bitcoin, recording the location and transfer of assets and service rights, and registering processing to be executed in the future (smart contract). In addition, I have compiled and introduced the opinions of experts attending blockchain-related events and seminars through a survey process. To digress a bit, the argument that JASRAC will become unnecessary will almost always be made whenever the topic of blockchain technology comes up at a music-related event, but there is often a misunderstanding about the actual situation at JASRAC. Based on the extremely unrealistic premise that "JASRAC distributions are based on poor accounting practices and almost all collected royalties go into JASRAC's pocket and not returned to the author," a model that differs from copyright management performed at JASRAC is called "copyright management"[*1] and it has been said that JASRAC functions can be replaced by blockchain.

2.1 Blockchain-related technology verification

The following summarizes a report related to blockchain technology presented within the company in 2017.

· Blockchain technology cannot replace copyright management performed at JASRAC, but it has the potential of being used to update copyright management at JASRAC, create new services, etc.

· The positive application of blockchain technology has the potential of fortifying the role that JASRAC should play as a hub in the music industry.

It was later decided by management that concrete application of blockchain technology was difficult to investigate even if technical aspects could be verified simply through lectures, so verification of blockchain technology was carried out jointly with IBM Japan in 2018.

Here, nodes based on two organizations were virtually set up in a Hyperledger Fabric environment. A wallet for each work and a wallet for each rights holder were prepared and a model was constructed for distributing an original type of currency with royalties in mind through a smart contract. In this way, the feasibility of blockchain technology and smart contracts as well as the level of transparency that can be achieved were tested and evaluated. Although some problems became apparent in relation to transactions, the end result of this joint trial was a strong feeling for the attractiveness and potential of a consortium-type blockchain that could easily implement a mechanism for ensuring authenticity.

2.2 Two PoC trials in KENDRIX development

In February 2019, JASRAC publically announced that it was performing trials with the aim of making practical use of blockchain technology. Around this time, JASRAC had been exchanging information with Sony Corporation (now the Sony Group Corporation, referred to below as "Sony Group") on the use of blockchain technology in the music copyrights field. In October 2018, Sony Group issued a press release together with Sony Music Entertainment and Sony Global Education titled "Sony Develops Rights Management System for Digital Content Utilizing Blockchain Foundation." JASRAC, for its part, conducted proof of concept (PoC) trials jointly with Sony Group from 2019 to 2021 using the PoE function that forms part of the "Rights Management System for Digital Content Utilizing Blockchain Foundation."

2.2.1 2019–2020

Starting with the PoE function using the blockchain

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*1 Please refer to the following article that takes up the issue of a "copyright management" model in the context of a blockchain or smart contract. CPRA news Review: "Digital Technology and Copyright Management—Is a Paradigm Shift Occurring?— "
https://www.cpra.jp/cpra_article/article/000654.html

technology developed by Sony Group companies, JASRAC performed joint trials with the aim of making information sharing with music publishers and business processes more efficient. The development of a system for PoC purposes began in October 2019, and a PoC trial was conducted in February and March of 2020 together with 11 music publishers (represented by 15 individuals) who responded to a call for participation. Specific goals were to improve the reliability of data exchanged between professionals (JASRAC and music publishers) in copyright management, make information sharing more efficient, and automate the execution of some administrative processes in the future. Positive comments on the practical use of blockchain technology were received from participants, but no direction on developing a general-purpose module accommodating the business requirements of each company and achieving a smooth migration could be arrived at.

2.2.2 2020–2021

Continuing on, JASRAC together with Sony Group conducted interview-based research and a PoC trial targeting music creators who are the first users of the PoE function. Here, group interviews were conducted from December 2020 to January 2021 by dividing up 31 music creators (13 of which had concluded a trust contract with JASRAC) into 8 groups. As a result of these interviews, we were able to extract 13 issues related to music activities.

Then, from January 2021 on, we extracted two priority issues from those 13 issues and itemized the background to each issue and the measure to be taken. The two prioritized issues are summarized below.

- Issue 1: There are no means of opposing unauthorized use or release spoofing (for example, a third part uploads one's own audio file to a UGC service or streams it on a music subscription service)
- Issue 2: Existing copyright management systems are complicated presenting a high hurdle to using them (for

example, concluding a trust contract or registering a work with JASRAC is complicated).

A surprising finding from the group interviews was that so-called independent music creators who had not concluded a trust contract with JASRAC had experienced various kinds of copyright-related problems. On suffering damage from unauthorized use or release spoofing during independent musical activities, it was said that there was no third party that could provide evidence or proof that that author of that musical work was definitely oneself, which could make one fall into a state of despair. Although such music creators would like to receive the support of JASRAC or a music publisher with specialized knowledge, it became clear that they were overly self-critical thinking that their lack of commercial success would make it difficult to conclude a trust contract with JASRAC or receive the support of a music publisher.

The background to such issues is twofold. First, there is the proliferation of UGC services, SNSs, and music-streaming services that make it possible to release musical works without going through a record company or talent agency, and second, there is the spread of digital tools and knowledge that make it possible for even individuals to create high-quality musical works thereby expanding the productive range of music creators.

Table 1 summarizes the measures taken for each of the above issues.

2.3 Development of KENDRIX

Itemizing the issues extracted from the interviews with music creators revealed that simply providing a PoE function even in a primitive state was worthwhile. It was also recognized that there was a high hurdle for independent music creators to using services that JASRAC can provide despite their needs, and in many cases, that the provision of services failed without even having the opportunity for direct interaction.

It is a misunderstanding that JASRAC does not properly

■ **Table 1: Measures taken for priority issues**

	Functions That Could Help Resolve Issue	Measure
1	・Enable centralized management of audio files and metadata ・Enable recording of a musical work's author information by a system that prevents third-party tampering ・Provide extremely reliable and highly public institutions that manage the same data	Decentralized musical works information management system using blockchain technology
2	・Improve/fortify the flow of registering works online at JASRAC ・Make it easy for music creators without a deep knowledge of the law or business practices to use existing copyright management systems as needed	Data linking, application submittal and registering, and the concluding of contracts are performed online with a business partner like JASRAC

distribute the royalty fees it collects. By returning compensation for the use of a copyrighted work to the author, JASRAC is proud of being able to achieve a "Creation Ecosystem" in which culture thrives through the creation of more copyrighted work while doing so in a way that is highly precise with low costs*2 when compared with other fields of copyrighted work even from a worldwide perspective. JASRAC came to realize that providing a service (PoE function) that even independent music creators can enjoy without concluding a trust contract with JASRAC and that making it easy to participate in a Creation Ecosystem by concluding a trust contract with JASRAC or a copyright transfer agreement with a music publisher is none other than the mission of JASRAC. It was therefore decided to implement a prototype of a digital service constructed through PoC trials held from 2020 to 2021.

From August 2021 to January 2022, we again conducted interview-based research targeting music creators on a scale of 30 individuals. During this time, we also analyzed how Web services provided by major overseas copyrights management organizations were implemented while also analyzing JASRAC business operations, formulated a concept design and DX business plan, and produced creative output such as service name, logo, etc. Finally, in January 2022, we began the development of the KENDRIX system. As a result, we released a closed β-version of KENDRIX on June 28, 2022 as described above and officially launched KENDRIX in a public release on October 31, 2022.

3. Achievements after KENDRIX Release

Promotional content and events related to KENDRIX are being actively produced for music creators while progressively adding the functions described in sections 1.2–1.5. The KENDRIX YouTube channel regularly releases videos introducing the process of music production using KENDRIX to professional music creators, the experience of registering musical works on KENDRIX, etc. In addition, a music event sponsored by KENDRIX was held in March 2024 to provide music creators with a real opportunity to gather together and interact with each other. KENDRIX received good reviews at this event.

As of September 2024 at the time of writing this article, about two years has passed since the public release of KENDRIX. Positive results from the promotional activities described above are being felt and the number of users and registered musical works is increasing steadily. The feeling is that music creators are becoming increasingly aware and accepting of self-management tools for musical works information starting with the PoE of original audio files.

Going forward, we will devote our efforts to not only protecting personal rights and enabling stress-free release of musical works but also to developing functions that can contribute to the promotion of musical works after their release and the

promotion of music creators themselves. JASRAC aims to make KENDRIX a must-have tool for all music creators. In this way, we hope to create an environment in which copyrights are appropriately protected and compensations are reliably returned.

*2 JASRAC distributed 135.12 billion yen to consignors in FY2023 (April 1, 2023 to March 31, 2024). The amount deducted here as commissions came to 14.35 billion yen (10.7% of distributions). Ordinary revenue after adding interest income, etc. to commission revenue came to 14.54 billion while ordinary expenses came to 12.99 billion yen (9.6% of distributions). At 1.55 billion yen, this difference between revenue and expenditures will be redistributed to beneficiaries in FY2024, so the actual commission rate can be said to be 9.6%.

Cover Art

Lumberyard at Fukagawa (Fukagawa kiba) from A Hundred Views of Musashi Province
Woodblock prints depict famous landmarks in Tokyo.

Kobayashi Kiyochika
(1847-1915)

Source: National Diet Library,
NDL Image Bank
(https://rnavi.ndl.go.jp/imagebank/)

Rights of Music Creators: Current State and Issues

ENDO.
Director
Planning Department
Japanese Society for Rights of Authors, Composers and Publishers (JASRAC)

1. Income Structure and Compensation of Music Creators

The main source of income for music creators is copyright royalties. A copyright royalty is income generated every time a musical work authored or composed by a creator is used. Copyright royalties are distributed via a copyrights management organization like JASRAC or NexTone. Specifically, a copyright royalty is generated, for example, when a musical work is broadcast on radio, television, or other media, sold on a CD or music delivery service, or performed live.

The use of a musical work in karaoke can also form part of royalty income, and there is a wide range of other sources of revenue. These royalties are collected from music users (such as broadcast stations, record companies, karaoke operators, and subscription services) and distributed to music creators via JASRAC, NexTone, etc. (Figure 1).

As an example of this mechanism, a music streaming service like Spotify pays a copyright royalty of approximately 0.18 yen per play to the rights holder. However, this amount is distributed to all copyright holders such as authors, composers, and music publishers, so the amount coming to each individual creator will be less (for example, if a particular musical work includes lyrics, a royalty of 0.18 yen will first be divided equally among the author and composer, but half of each of those royalties will constitute the music publisher's share, so the amount obtained by the composer will be 0.045 yen per play). In this way, the rise of streaming services and the spread of digital music delivery have been instrumental in diversifying sources of income for music creators, but since revenue is low per request, it is difficult to live solely on such royalty income. This state of affairs is one reason why many music creators have side jobs. They must search out diversified sources of income by performing from time to time, managing classes, providing music to other artists, etc.

The population of music creators is increasing and the range of people who treat music as an occupation is broadening. At the same time, music revenue per person is on a downward trend and the proportion of creators who can make a living solely by music is decreasing. Amid the growth in revenue across the entire music market, current conditions such as the compensation structure of streaming services and the need to depend on other sources of revenue are having a direct impact on the lives of music creators.

2. Current State of Music Creators' Copyright Agreements

When a musical work of a music creator in Japan is to be commercially released, a copyright agreement will be concluded with a music publisher in most cases. A publisher manages the copyright on behalf of the creator and promises to promote the use of that musical work, but it is customary here for the publisher to receive 50% of the copyright royalty as compensation. This format is known as a "copyright transfer agreement" in which a creator signs a contact that transfers one's own copyright to the publisher. Based on this agreement, the publisher aims to expand revenues by promoting that musical work, promoting cover versions, providing the musical work to other artists, etc.

In actuality, however, there are not a few cases in which the music publisher does not actively develop the use of a musical work. Despite the fact that the creator pays the publisher half of the revenue, the inability to receive expected compensation has become a problem. According to a large-scale questionnaire conducted by the Japan Federation of Authors and Composers (FCA) in 2023, the majority of music creators replied, "Apart from the release of the musical work, there was no ongoing development of its use by the music publisher" (Figure 2). This reflects the current situation in which a creator cannot make effective use of one's own copyrighted work. There is therefore a need to enhance the transparency and management system of copyright agreements.

■ Figure 1

Royalty per play of unlimited-listening streaming services

Spotify (paid) ・・・ 0.18 yen
Spotify (with ads) ・・・ 0.004 yen
Apple Music ・・・ 0.29 yen
You Tube Music ・・・ 0.2 yen
Amazon Unlimited ・・・ 0.3 yen
LINE MUSIC ・・・ 0.16 yen
AWA ・・・ 0.12 yen
KK BOX ・・・ 0.44 yen

＊ Distribution data as of June 2024

■ Figure 2

Apart from the release of the musical work, there was no "ongoing" development of its use by the music publisher.

51.8%

∗ Excerpt from FCA 2023 fall questionnaire

In particular, if the period of the copyright agreement is set to a long period as in "duration of copyright (up to 70 years after the death of the author)," the period of the agreement can often exceed 100 years, and during that time, there is hardly any opportunity to revise one's own rights (Figure 3). With such a bizarre agreement lasting such a long time, a creator might think about terminating the agreement, but recovering one's rights is still difficult. In this way, flexibility in the copyright agreement is lacking and the possibility arises that the rights of the creator are being unreasonably limited.

■ Figure 3

Work with lyrics
Q) Is there a contract period that you signed to in your copyright agreement with a domestic music publisher?
A) Yes, I signed an agreement having a copyright duration.

42.3%

42.3% of music creators who have signed a copyright agreement have experienced a copyright duration.

Background music
Q) Is there a contract period that you signed to in your copyright agreement with a domestic music publisher?
A) Yes, I signed an agreement having a copyright duration.

44.7%

44.7% of music creators who have signed a copyright agreement have experienced a copyright duration.

In addition, while the clause "the copyright will be managed to develop use of the work" is definitely included in the contract, there are cases in which development of use is actually not performed as described above. Such a case should be treated in effect as a breach of contract, but penalties and remedies have not been determined, so not a few creators are left in a disadvantageous position. To deal with this problem, it is important that the creator adopt a more proactive role at the contract negotiation stage and take appropriate measures such as seeking the advice of a lawyer.

3. Issues Faced by Music Creators

One of the biggest problems affecting music creators is inequality and lack of transparency in the copyright agreement (Figure 4). Many agreements are concluded unilaterally under conditions favorable to the music publisher, and as a result, the creator cannot sufficiently manage one's own revenue and rights. In the case of an agreement with a long copyright duration, it is particularly difficult for a creator to recover rights even after one's death. There is consequently a high risk that the creator or the creator's survivors will lose any opportunity to receive appropriate revenue.

■ Figure 4

Problem sensed in copyright agreement: "The contents of the agreement are unilaterally determined."

60.9%

No explanation of the contents of the agreement is received from the music publisher in advance.

52.7%

Another problem is that there are many music creators that sign an agreement without having a sufficient understanding of contract details. A contract includes important information for the music creator in terms of protecting one's rights and revenue. Concluding an agreement without understanding its content poses a great risk. In particular, having no firm understanding of contract cancellation conditions, percentage of share, contract duration, etc. can lead to major problems in the future. The music creator needs to understand the agreement in detail and seek the advice of a specialist if necessary.

4. The Rise of AI and the Future of Music Creators

The rise of AI in the music industry is a major problem for music creators. Although the progress made in AI technology in recent years is making it possible for generative AI to take on some tasks in music production, it simultaneously has the potential of affecting the occupational standing and income of music creators.

To begin with, generative AI can definitely improve the efficiency of music production. For example, using AI in tasks such as creating demo vocals or tentative lyrics or adjusting sound quality can save time and reduce costs. Specifically, AI can sing demo vocals in place of a human and can quickly generate tentative lyrics. In addition, using AI to adjust sound quality can obtain results equivalent to those of a professional engineer in a relatively short time, which can be a great aid in the music

production process.

However, the increasing application of generative AI to music is increasing the number of problems that music creators have to deal with. Indeed, some music creators are worried that generative AI is threatening their occupation. In particular, for applications in which music does not play a leading role, such as background music for television programs or songs used in short commercials, AI-generated music has the possibility of replacing human creators. There is therefore the fear among music creators that the market that has so far been served is contracting.

In addition to the above, copyright-related problems can be major issues. Generative AI often uses existing musical works as training material, so there is the risk of copyright infringement in that process. There are many creators who are not happy about their own works being used to train AI without permission, and they insist that they should be compensated accordingly. In Japan, the regulation of copyright law in relation to AI training is lax, and at present, AI developers can perform training without paying an appropriate amount of compensation to creators, which music creators feel to be unfair.

As the quality of music produced by generative AI improves, the possibility exists that the boundary between AI music and human music will become increasingly vague. In such a case, conditions will arise in which consumers will not be able to distinguish AI music from human works, which raises the fear that musical culture in its entirety will become dependent on AI-generated music. As a result, it has been pointed out that the value of music that demands creative human expression may begin to fade out.

5. Protecting the Rights of Music Creators

To deal with the problems faced by music creators, each creator must understand one's own rights and take appropriate countermeasures. When concluding a copyright agreement, it is vitally important to sufficiently examine the contents of the agreement and carefully check whether any unfavorable conditions are included. It is also desirable to set a short contract period and to periodically review the contents of the contract. Seeking the advice of a specialized lawyer to understand contract details as needed is also an effective measure.

A creator should also consider concluding an agreement with a copyrights management organization and directly managing revenue and data details. This makes it possible to grasp revenue flow in a transparent manner and to understand in detail how one's music is being used. In particular, to receive appropriate revenue for the use of one's music overseas, concluding an agreement with JASRAC that promotes agreements with individual creators is an affective approach that enables detailed revenue data to be obtained.

In addition, the music creator should seek out increases in

compensation (royalties) from companies in cooperation with a music copyrights management organization like JASRAC or NexTone. In this way, the creator can establish an environment for receiving appropriate compensation. Additionally, as new copyright issues arise with the spread of AI, there is a need for discussion and measures across the entire industry. Amid increasing use of copyrighted works owing to AI, there is an urgent need for laws and guidelines to prevent the rights of music creators from being violated.

To deal with the impact of advances in AI technology, music creators need to become more aware of their rights and set up an appropriate legal framework. The FCA proposes measures to ensure transparency in AI training, respect the right of copyright holders to choose, reduce burden of proof of dependency on one's musical work, and strengthen penalties with respect to unauthorized use of a copyrighted work. In this way, the FCA places importance in protecting the rights of creators and creating an environment for sustaining a creative life.

The expansion of AI is bringing about innovative possibilities in the music industry, but it is simultaneously giving birth to new issues. The strengthening of legal provisions and the protection of rights is essential to protecting musical culture in a form that can coexist with AI. In addition, music creators themselves must assert their rights and make preparations for dealing with the evolution of AI technology.

6. Initiatives of the Entire Music Industry

Cooperation throughout the music industry is essential to protecting the rights of music creators and establishing a sustainable revenue model. There is a need for initiatives that draw upon the cooperation of industry organizations, copyrights management organizations, music publishers, record companies, streaming services providers, government agencies, etc. to ensure fair and transparent copyright management and payment of appropriate compensation. It is also important to promote educational and awareness-raising activities for music creators to provide the knowledge they need to understand and effectively protect their rights. Through these initiatives, creators can dedicate themselves to creative pursuits without worry and an environment that continues to produce high-quality music can be established. There is also an urgent need to set up a new copyright system taking into account the expansion of AI technology and promote discussion and cooperation throughout the industry. Protecting the rights of music creators will not only contribute to the sound development of the music industry but also protect the right of consumers to enjoy high-quality music. Music is a part of culture—its creation and development has value for all of society. Protecting the rights of music creators and paying appropriate compensation is indispensable to protecting the future of musical culture.

Services for Music Creators through SoundOn

Tomishi Kato
Bytedance Co., Ltd.
Music-Artist Services-Promotion and Distribution-NEA.SEA

1. Introduction

We provide a wide range of music services to users. This article outlines our efforts to provide services for music creators through "SoundOn," namely, an all-in-one platform for music promotion and distribution provided by the short-movie platform TikTok, which began offering a beta version of SoundOn in Japan in January 2024 and officially launched it in September 2024.

2. What is SoundOn?

SoundOn was launched under the aim of supporting artists in three ways: expanding their fan base, building their careers, and delivering their music to the world. Powered by TikTok, SoundOn connects users—directly through TikTok—to a global community of over one-billion people every month. It also enables easy-to-use analysis of SoundOn data and allows artists to manage their own music under fair licensing terms. Since being launched as an international service in 2021, SoundOn has supported many artists around the world through distributing, promoting, and building their careers on TikTok and other platforms in a manner that helps them receive revenue quickly and easily.

One feature of SoundOn is its affinity with TikTok. In the process of being distributed on various distribution services, songs that pass through SoundOn are also released on TikTok. Once on TikTok, those songs are delivered to a wide range of music fans via a unique recommendation system that offers songs as "recommended songs" (even to TikTok users who were not previously aware of the artist). This recommendation process leads to recognition of songs and the acquisition of more fans.

The resulting growing fan base is not limited to domestic markets; that is, thanks to the power of the TikTok community, it also extends to music fans in overseas markets. In consideration of the fact that Japanese music is popular around the world, especially in Asia, TikTok has become an indispensable and powerful promotional tool that enables music creators to increase awareness and recognition of their music among TikTok users around the world (Figure 1).

3. Mechanism of eco system for returning royalties by SoundOn

Through SoundOn, music creators can distribute their music to music-distribution services worldwide. If the music of one of those music creator is used by a music-distribution service, the music creator will receive royalties from the music-distribution service in proportion to the use of the music (as shown by the red arrows and red lines in Figure 2).

If the music shared with each music-distribution service is entrusted to a copyright-management organization, that organization collects royalties and distributes them to the music creators via the existing network of copyright-management organizations. Note that royalties are collected not only in the digital domain but also in the use cases of broadcasting and reproduction (as shown by the blue arrows and blue frame in Figure 2).

Moreover, when SoundOn confirms that the copyright of

■ **Figure 1**
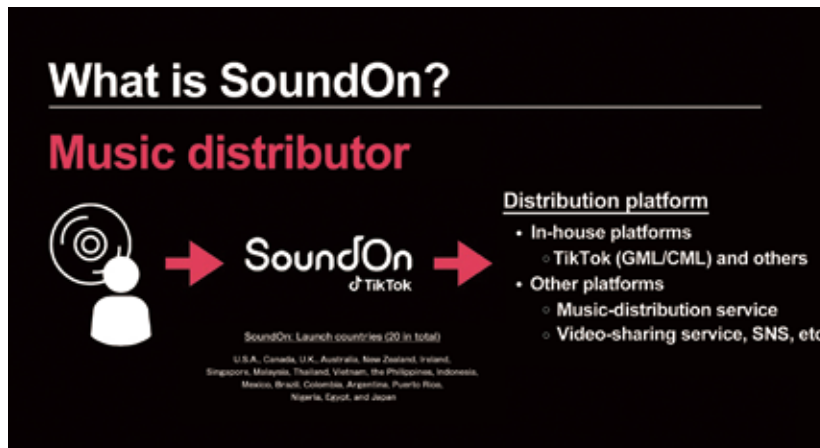
■ **Figure 2**
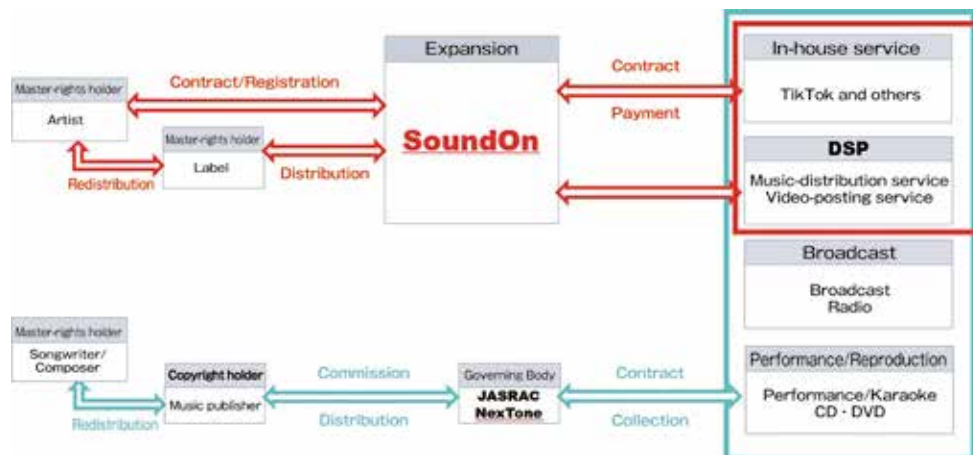
a song registered on SoundOn is not controlled by a copyright-management organization, while aiming to maximize profits for music creators, it introduces music publishers and copyright-management organizations (JASRAC, NexTone, etc.) to the music creator of the song in question. In particular, while explaining copyright and master-recording rights to music creators, SoundOn strives to enable music creators to monetize their own rights by creating an environment and mechanism that allow them to fit into the existing rights framework.

4. Measures for video creators

A unique promotional mechanism that appoints video creators related to the music distributed by SoundOn is introduced as follows (Figure 3). By soliciting submissions of high-quality videos from video creators, the "Collaboration with TikTok creators" campaign aims to encourage more people to view the songs and videos, which will thereby be used not only on TikTok but also widely by music services, broadcasters, and karaoke platforms. For this campaign, we have implemented a mechanism that allows video creators who post high-quality videos to receive royalties

from a fund (set aside for the song in question) in proportion to the number of views on TikTok. This mechanism will boost the use of music on TikTok, attract high-quality videos, and create a major trend on TikTok. The same trend, namely, collaboration with TikTok creators, is also influencing music-distribution services, and it will lead to further use of SoundOn-created content for services like karaoke, broadcasting, and live performances. Expanding these uses of SoundOn—by fully utilizing the existing mechanism for collecting royalties described in Section 3—will ultimately help artists and creators to earn the income that forms the basis of their livelihoods and creative activities.

5. Conclusion

As described above, being more than just a music-distribution service, SoundOn is a service that supports the growth of music creators by fully utilizing its affinity with TikTok. We strive to ensure that the music distributed through SoundOn can contribute to the creation of new culture, music, and content by connecting with the economic sphere surrounding TikTok and existing music businesses.

■ **Figure 3**

OIKOS MUSIC Supports Sustainable Musical Activities

—Promotion of investment in music and culture through the buying and selling of music rights—

Akihiro Ichimura
Co-founder, Representative of Director
OIKOS MUSIC Inc.

1. Current situation surrounding the music industry

In today's VUCA (volatility, uncertainty, complexity, ambiguity) era, the music industry is not exempt from the oncoming wave of IT, and it is undergoing a rapid "digital shift" from its traditional industrial structure. As this digital shift gathers pace, the process of creating music and the opportunities to experience music have become more diverse than ever before; consequently, the music industry is becoming one of the industries that is growing alongside the rise of new business opportunities. The most-significant changes affecting the music industry are manifested in music distribution, opportunities for consumers to experience music, and operational organization of musical activities of artists (increase in so-called "DIY artists").

As for the first change, music distribution is shifting from physical media (CDs) to streaming. As shown in Figure 1, streaming accounts for 67.3% of global music-industry revenue (2023 results), namely, a proportion that makes streaming the mainstream music distribution, and the market size of streaming has grown to nearly four times that of physical media (CDs). Moreover, as shown in Figure 2, even in Japan, where physical media (CDs and videos) accounts for a high proportion of music-industry revenue, streaming grew to a market size (105.6 billion yen) approaching that of physical media (146.3 billion yen) in 2023. In consideration that only five years ago, sales of physical music media were more than five-times those of streaming music, the extent to which streaming has taken off in Japan since then has been remarkable.

Reference: IFPI "Global Music Report 2024," Recording Industry Association of Japan "RIAJ2024"
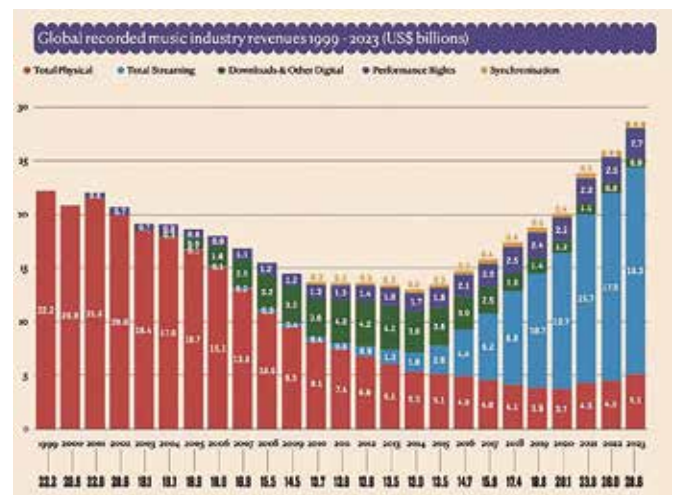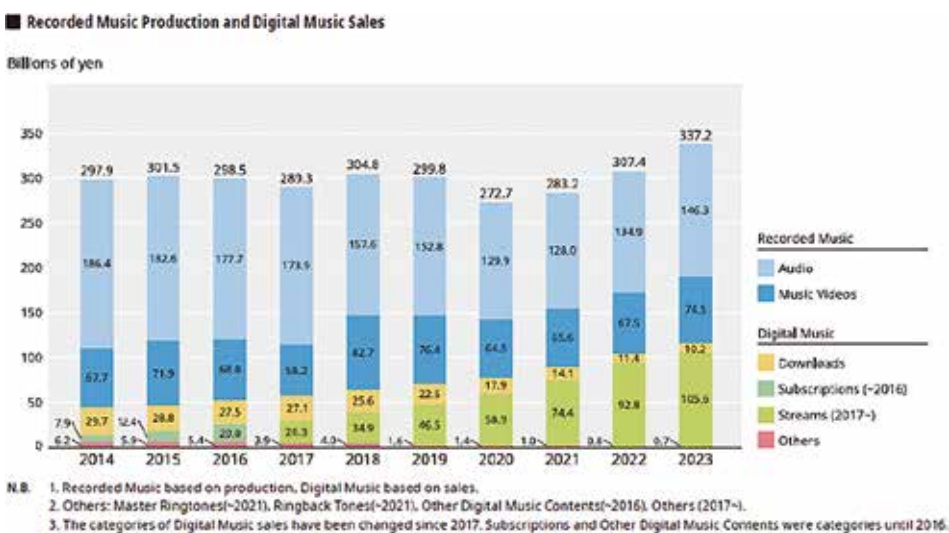
■ **Figure 1: IFPI "Global Music Report 2024"**

■ **Figure 2: Recording Industry Association of Japan "RIAJ2024"**

2. "OIKOS MUSIC": A Master-license Marketplace

As for the second change, opportunities to experience artists' music have expanded, so many new challenges have arisen. One challenge is the revenue structure of streaming services. The amount that artists receive from streaming revenues is 0.4 to 1 yen per play of their songs. Streaming services are primarily funded by subscription revenues or advertising revenues, and the unit price is inevitably lower than that of CDs. Unlike a one-time purchase, a streaming service is a semi-permanent system that generates revenue, so if an artist's music is not streamed, income will not be generated and passed to the artist. The key to getting an artist's songs streamed is to fully utilize digital tools like social media and take advantage of the current flow of information via such media. If we consider the songs and artists that make it onto the music charts, even artists signed to major labels can sometimes struggle on streaming services. On the contrary, we are now living in a world in which ever more music is created by DIY artists.

Born under this historical background, OIKOS MUSIC is a 'master-recording-rights marketplace' where music rights, known as 'OIKOS,' can be bought by listeners. These OIKOS, represented as NFTs, grant the holder the right to receive a portion of the revenue generated by subscription music-distribution services. In that way, it provides artists with new monetization and promotional opportunities. By using this marketplace, artists will receive revenue from sales and music distribution on OIKOS MUSIC and support for music distribution. OIKOS MUSIC strives to support as many artists as possible so that they can pursue their musical careers sustainably.

The most-unique feature of this marketplace is revenue sharing with fans and listeners. When OIKOS are bought by a fan or a listener, a give-and-take relationship can be brought to fans and artists, and that relationship creates an interactive structure similar to that of a social-networking site. Conventionally, music is structured so that artists unilaterally deliver experiential or spiritual value to listeners in exchange for a return in a manner that creates "fandom participation." However, OIKOS MUSIC goes a step further and allows fans and listeners to become owners of their favorite music. In other words, fans and listeners can also play a part in music production. In addition to returning revenue to listeners, OIKOS MUSIC also has a function for granting privileges that makes it possible to use it like a fan club.

The solution to achieve the above-described functions is the use of Ethereum-based NFTs. The original recording information is written into the NFT, which is then used to distribute revenue to listeners. The source of the return is based on streaming play counts, and the specification allows that return to be estimated from data.

■ **Figure 3: Business model**

At present, the actual accomplishment of OIKOS MUSIC is that it is primarily used by independent artists. It is being used by artists as a way to get revenue opportunities and a form of promotion. In fact, some artists are beginning to use the proceeds from OIKOS MUSIC to support their musical activities (e.g., paying expenses for planning and organizing live performances and for using studios). On the contrary, in terms of fan rewards, if the music is not streamed, revenue will not be generated, so OIKOS MUSIC has not yet reached a level where it can be considered a success. We believe it is important to produce enough hit songs from the OIKOS MUSIC platform to give back to the fans and listeners who own OIKOS.

3. Future developments

Our vision is to support artists in creating sustainable culture and to make investment in music and culture a part of Japanese society. Right now, we must focus on growing our business so that OIKOS MUSIC can be a catalyst for realizing this vision.

Currently, OIKOS MUSIC is more like a start-up investment, a strong aspect of which is fan-supported investment; even so, if we can develop it into a platform that can increase the rate of return to fans, we believe it will get closer to realizing our vision. Incidentally, from a global perspective, the buying and selling of music rights is becoming more widespread. In particular, many of us have seen news of popular artists in Western countries selling their rights to major record companies and fund companies at high prices. In addition to those settled cases, music investment is beginning to take root among the general population in Korea, where the entertainment sector is a national policy. By encouraging a similar approach to music investment in Japan, we can drive the Japanese music industry toward greater success.

APT Training 2024
—Developing fundamental network planning skills to bridge the digital divide in rural areas—

The ITU Association of Japan
International Cooperation Department

In an effort to eliminate information disparity between urban and rural areas of developing countries in the Asia-Pacific Telecommunity (APT), the ITU Association of Japan (ITU-AJ) has been running a human-resource training program called the "APT Training program"[*1].

In FY2024, a face-to-face training program was proposed to the APT for the eight days[*2] from October 23 to November 1. This program was decided in late July, and participants were recruited from August 2 to 29, with 13 participants selected from nine countries (Cambodia, Malaysia, Mongolia, Nepal, Sri Lanka, Palau, Kiribati, Tonga, and Tuvalu). The trainees were lodged at the Hotel Sunroute Plaza Shinjuku, near the south exit of Shinjuku Station, and the training was held in meeting rooms on the fourth floor of an adjacent building.

In an effort to eliminate information disparity between urban and rural areas in developing countries, trainees gained skills to analyze the state of communication networks in their own countries, to use basic network design methods for eliminating information disparity, and to apply these methods designing communication networks optimized for their regions.

The training was conducted with lectures and drills for practice. The network planning lectures, regarding technology methods for overcoming digital disparity, and practice drills were handled by Mr. Takayoshi Hamano, formerly of NTT. There were also lectures on Open RAN, given by Mr. Yuji Araki from OREX SAI Co. Ltd.

The schedule for the eight-day training program was as follows:
- Day 1 AM: Orientation, opening ceremony
  PM: Presentation of trainee country reports, welcome reception
- Day 2 AM: Presentation of Japan country report by Mr. Komoro
  PM: Lectures by Mr. Hamano and Mr. Araki
- Days 3, 4: Group practice drills and presentations
- Day 5: Visit to NTT e-City Labo and Jindaiji temple
- Day 6: Group practice drills and explanation of action plans
- Day 7: Creating action plans
- Day 8 AM: Presentation of trainee action plans, closing ceremony, farewell lunch

On the morning of the first day, orientation and guidance regarding the training were given. The orientation included the training schedule and a guide to the Shinjuku area. In the afternoon, there was an opening ceremony, in which Mr. Kaiho Aono from the Ministry of Internal Affairs and Communications (MIC) gave a greeting (Figure 1). This was followed by presentation of country reports by the trainees, which they were required to prepare beforehand (Figure 2). The trainees presented overviews of their respective countries, conditions such as the state of ICT facilities, and the remote region selected for an action plan. Trainees and the instructors shared the state of communications environments in their countries through these presentations and Q&A sessions. After presentation of the country reports, a welcome reception was held in the 2F meeting hall of the hotel where the trainees were staying. Mr. Kotaro Mogi from the MIC attended this reception, building closer friendships with

■ **Figure 1: Group photograph at the opening ceremony**

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*1 A training program funded by the Japanese government to transfer Japanese technologies and services to business people and technologists in APT countries.
*2 Excluding the intervening Saturday and Sunday.

■ Figure 2: A country report presentation
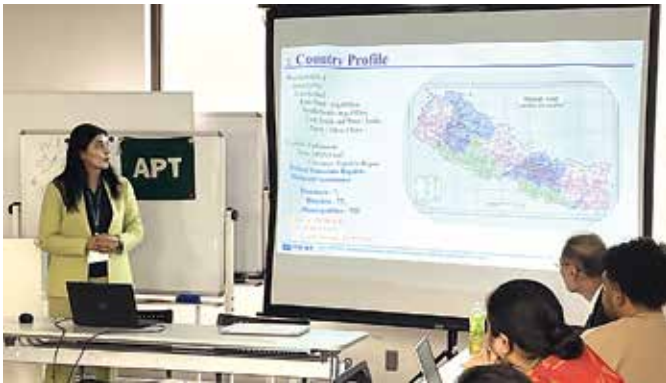
■ Figure 3: Network planning lecture by Mr. Hamano

■ Figure 4: Group discussion during practice drills

■ Figure 5: Presentation after group discussion during practice drills

the participants.

In the morning of the second day, Mr. Takashi Komoro, Secretary-General of the ITU Association of Japan, gave a presentation on the state of mobile communications in Japan, as the country report for Japan. In the afternoon, Mr. Hamano gave a lecture on the network planning to be done on the third and following days, and on wireless technology (Figure 3). This was followed by a lecture on Open RAN by Mr. Araki from OREX SAI Co. Ltd, teaching details about the Open RAN initiative.

On the third, fourth and sixth days, trainees learned basic network design methods through practice and discussion, using drills created with different types of geographic data on each of the three days. During the mornings, the lecturer gave an explanation of the drill, and each trainee individually devised a network plan for that geography. In the afternoons, trainees divided into four groups of three or four

and discussed what would be the best network plan for that geography. These discussions were repeated twice, changing group members, to reach an optimal network plan. Finally, a representative from each group presented their optimal network plan, and these were evaluated by the lecturer, giving comments (Figures 4 and 5).

On the fifth day, trainees visited NTT e-City Labo, in the NTT Central Training Center, so they could see a leading technology research facility in Japan (Figure 6). At NTT e-City Labo, trainees toured some of the solutions that the NTT East Group is currently working on to solve local issues, including digital art, drone-use in infrastructure inspection

■ Figure 6: Group photograph from visit to NTT e-City Labo

■ Figure 7: NTT e-City Labo visit

■ Figure 8: An action plan presentation

(for disaster response and agriculture), 270° naked-eye VR theatre, Local 5G Open Lab, νLab (New Lab), smart construction and logistics, ultra-compact biogas plant, self-driving buses, remote farming trial houses and smart houses, and learned about solutions for realizing a local circular society (Figure 7). Trainees then learned about Japanese culture through a visit to the Jindaiji Temple, which is known as one of the foremost ancient temples in the Kanto region, with a guided tour of the temple given by volunteer sight-seeing guides.

The seventh day was allocated to creation of action plans. On the previous day, Mr. Hamano described how to create an action plan and an application that can be used to create an action plan. The trainees selected a rural area in their own country and had to consider specific factors such as the population, the geography, and the facilities available. They studied optimized network plans for eliminating the digital divide and summarized their materials.

On the last day of training, the trainees gave presentations of their action plans (Figure 8). Q&A sessions with the lecturer and auditors regarding the action plans were held, leading to lively discussion. Afterwards, a closing ceremony was held, with Mr. Komoro, General Secretary of the ITU-AJ, presenting each trainee with a completion certificate (Figure 9). This was followed by comments from the participants evaluating the training, and then a farewell lunch with Japanese cuisine at a Japanese restaurant.

As with last year, there was catering with drinks and snacks in the training rooms, facilitating lively communication among the trainees and with lecturer and staff. The trainees were particularly interested in the Japanese snacks. To facilitate and promote active group discussion, tables were arranged so that each group could sit around a map of the geography they were discussing. By also holding discussions several times with different group members, they were able to study the network plans while hearing diverse opinions, which helped to create more-complete network plans. A representative from each group presented their best network plan, and effort was made to ensure each member had a chance to give a presentation. Through these efforts, we obtained action plan reports from all of the trainees by the final day.

Satellite communication has been more common in recent years. Many of the trainees this year were interested in satellite communication, and the lecturer received many questions about it. For future lectures and research facility visits, we will take the latest communication technology trends into consideration when planning lecture content and locations to visit. Also, while the basic concepts related to communication network design and construction will not change, we hope to re-examine the training content to make the training more meaningful and to make the practice drill content more appropriate.

In conclusion, we would like to offer heartfelt thanks to all involved in offering this training program, and in particular to everyone at APT and MIC for their guidance and cooperation, to Mr. Hamano for his efforts preparing the lecture materials and guiding the trainees, to Mr. Araki from OREX SAI Co. Ltd. for giving his lecture, and to Mr. Kobayashi from NTT East for handling the field trip.

■ Figure 9: Group photograph at the closing ceremony

Overview of the 2024 White Paper on Information and Communications

Economic Research Office
ICT Strategy Policy Division
Information and Communications Bureau
Ministry of Internal Affairs and Communications

This White Paper includes two special features. The first feature, "The Status of Information and Communications related to the 2024 Noto Peninsula Earthquake", summarizes the damage to telecommunications and broadcasting infrastructure in the 2024 Noto Peninsula Earthquake, recovery efforts, the role played by information communication technology (ICT), and the issues that emerged and future efforts. The second feature, "Living in Harmony with Evolving Digital Technologies", touches on the new possibilities and risks that AI and other technologies bring to society and the economy, and looks at the prospects for sound utilization of these technologies.

Special Feature 1 : The Status of Information and Communications related to the 2024 Noto Peninsula Earthquake

Chapter1 The Status of Information and Communications related to the 2024 Noto Peninsula Earthquake

Section1 Summary of the 2024 Noto Peninsula Earthquake

The earthquake that occurred in the Noto region of Ishikawa Prefecture on January 1, 2024 had a significant impact on the information and communication infrastructure, causing disruptions in communication networks and power outages, affecting the use of smartphones and other communication devices, and leading to the suspension of television broadcasts in the Hokuriku region. Efforts were made by telecommunication companies, local governments, and government agencies to restore the information and communication infrastructure.

Section2 Status of communication, broadcasting and postal services etc.

1. Damages to communication infrastructure

Regarding fixed-line communications, services were unavailable mainly in Wajima City, Suzu City, and Shika Town in Ishikawa Prefecture. According to NTT West, this affected up to 7,860 fixed telephone lines and approximately 1,500 fixed internet lines.

A total of 839 mobile phone base stations (799 in Ishikawa Prefecture) was reported outage.

2. Damages to broadcasting network

Regarding the terrestrial television broadcasting, there were service disruptions for NHK, Japan's public broadcaster, and four private broadcasters in some areas of Wajima City in Ishikawa Prefecture, impacting approximately 2,130 households.

As for cable broadcasting, Wajima City, Nanao City and Noto Town which are directly managed by local governments, Suzu City, and Anamizu Town which falls within the service area of Nouetsu Cablenet, and as well Shika Town which falls within the service area of Kanazawa Cable, there were instances of transmission disruption due to power outages, depletion of backup power, and the collapse of utility poles due to landslides.

3. Damages to postal offices etc.

Due to the effects of the earthquake, including the collapse of postal facilities, water supply disruptions, and equipment failures, up to 117 post offices (including temporary post offices) in Ishikawa and Niigata prefectures suspended counter services. Additionally, delays and suspensions in postal and logistics operations occurred in these regions.

4. Initiatives to ensure communication tools

(1) Operation of mobile and portable base stations, mobile power supply vehicles, and generators

To address disruptions caused by landslides and prolonged power outages immediately after the disaster, each mobile phone service provider operated maximum approximately 100 mobile and portable base stations and utilized a total of maximum approximately 200 mobile power supply vehicles and generators in collaboration with the government and private sector.

(2) Utilization of mobile base stations

NTT DOCOMO and KDDI jointly operated a shipbased mobile base station to provide coverage to coastal areas in part of Wajima City, where restoration via land routes was challenging.

Additionally, SoftBank deployed a drone-based wireless base station capable of long-duration flights by providing wired power from ground-based power supply equipment.

(3) Utilization of satellite communication services

Related to the Noto Peninsula Earthquake, many areas experienced a loss of communication services due to transmission line disruptions and power outages at mobile phone base stations. To address this issue and facilitate emergency restoration, SpaceX's low Earth orbit satellite communication service, Starlink, was widely utilized. KDDI, in particular, used Starlink antennas to connect to mobile phone base stations as a substitute for fiber optic and other communication cables that were severed by landslides. In addition to KDDI, NTT DOCOMO and SoftBank also provided Starlink equipments to evacuation centers and Disaster Medical Assistance Teams (DMAT), enabling internet communication via Wi-Fi.

**Chapter2 The Roles which the Information and Communications Took and Challenges**

Section1 Information gathering and dissemination related to the disaster

1. How the citizens gathered the information related to the disaster

To investigate how people utilized information and communication tools to obtain earthquake-related information, a nationwide survey was conducted targeting the citizens.

Firstly, when asked how they confirmed the safety of family, friends, and acquaintances at the time when the Noto Peninsula Earthquake occurred, the most common response was LINE (67.1%), followed by mobile phones(40.1%) .

■ **Figure 1: How to confirm the safety of family, friends and acquaintances etc.**
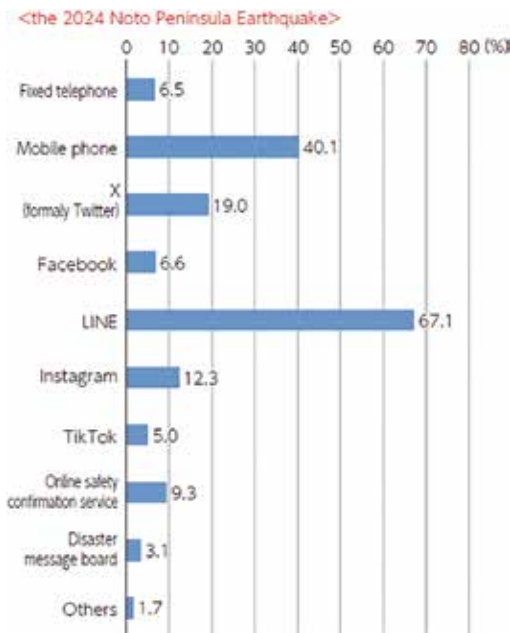
※ Among all respondents, the methods used by those who answered "conducted safety confirmation" (n=604) were aggregated.
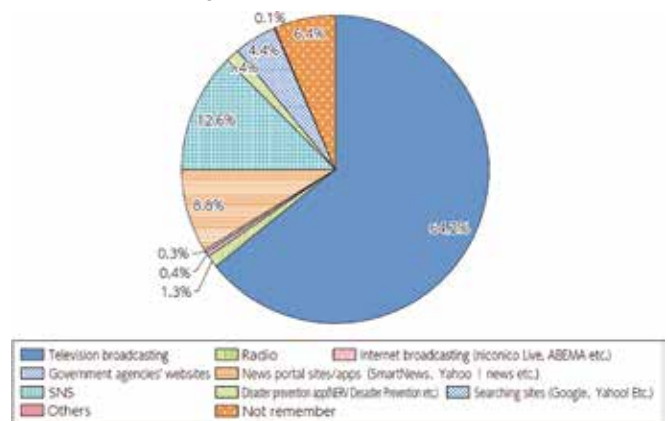(Source) The Ministry of Internal Affairs and Communications (MIC) (2024) "Research and study on the latest trends in information and communication technology research and development, as well as digital utilization, both domestically and internationally"

Secondly, when asked which media they first accessed after noticing the earthquake, 64.2% of respondents mentioned television broadcasts (NHK and private broadcasters combined), which was higher than other options.

Looking at the data by age group, television broadcasts were the most accessed across all age groups, with the percentage increasing with age. Among those in their 20s, a high percentage also mentioned social media (30.5%).

Among those who encountered such information, 25.5% admitted to sharing it with acquaintances or disseminating it to a broader audience. The reasons given for this included "believing the information would be useful to others," "finding the information interesting," and "wanting to alert others to the possibility that the information might be incorrect."

■ **Figure 2: Media firstly accessed after noticing the earthquake**

(Source) MIC(2024) "Research and study on the latest trends in information and communication technology research and development, as well as digital utilization, both domestically and internationally"

■ **Figure 3: Media firstly accessed after noticing the earthquake by age**
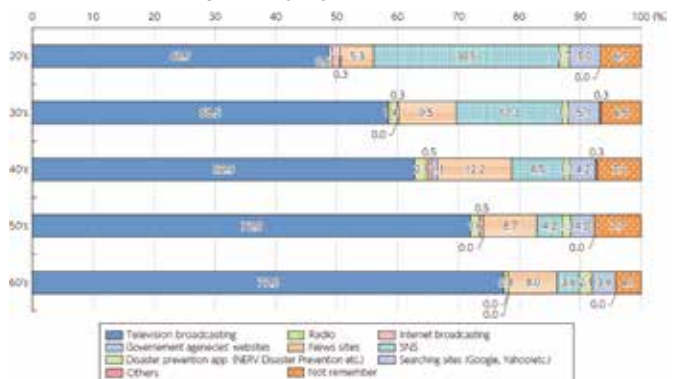
(Source) MIC(2024) "Research and study on the latest trends in information and communication technology research and development, as well as digital utilization, both domestically and internationally"

Section2 Highlighted issues and responses in the future

1. Communication

(1) Strengthening mobile base stations and optical fiber

In the Noto Peninsula Earthquake, power outages and transmission line disruptions caused mobile base stations to be non-functional for extended periods. To fortify mobile base stations against future disasters, it is necessary to consider measures such as extending the lifespan of the batteries installed in these stations, installing solar panels, and utilizing satellite connections.

Additionally, the disruption of transmission lines also rendered fixed internet services unusable. To prevent future disruptions caused by the collapse of utility poles and the severing of optical fibers, it is essential to promote the underground installation of these fibers.

(2) Achieving intercarrier roaming in emergencies

"Intercarrier Roaming," which allows mobile phone users to temporarily use another mobile carrier's network, is one strategy to ensure continuous communication services related to natural

disasters or communication failures.

The Ministry of Internal Affairs and Communications (MIC), Japan has been holding the "Study Group on Intercarrier Roaming in Emergency Situations". The study group is also conducting technical examinations and verifications.

2. Broadcasting

In response to the recent Noto Peninsula Earthquake, broadcasters played a crucial role in delivering accurate information to the affected individuals. However, challenges such as power outages and transmission line disruptions leading to service interruptions also became apparent. In preparation for future disasters, it is necessary to strengthen broadcast networks by implementing measures such as power outage countermeasures for center facilities, enhancing monitoring capabilities for transmission lines, and promoting the shared use and common facilities of relay stations. Additionally, measures such as optical and multiple-wire conversion of cable networks should be implemented to enhance the resilience of broadcast networks.

3. Postal services

Efforts are being considered to utilize data held by the post office, such as by installing drive recorders on delivery vehicles to selectively collect and analyze information on the road conditions in the Okunoto region.

4. Response to dis-/mis-information

In the Noto Peninsula Earthquake, the circulation and spread of dis-/mis-information on the Internet became a significant issue, exacerbated by the increased use of social media by the public. The MIC issued a warning about dis-/mis-information on the Internet through social media on January 2, the day after the disaster. Additionally, the MIC requested major social media platform operators to take appropriate actions based on their terms of use.

Special Feature 2 : Living in Harmony with Evolving Digital Technologies

Chapter3 History of Digital Technologies

Section1 History of development of AI and impacts of generative AI

1. History of development of AI

The history of AI began in the 1950s and has experienced several cycles of booms and winters. The first AI boom, which started with exploration and reasoning, led to the incorporation of technologies such as speech recognition in the second AI boom. The third AI boom introduced innovative technologies such as deep learning, paving the way for practical AI applications to permeate society. The rapid proliferation of generative AI around 2022 marked the onset of what is now referred to as the fourth AI boom.

2. Impacts of generative AI

(1) Rapid progress and dissemination of generative AI

The advent of deep learning as a foundational technology has led to a significant improvement in AI performance, giving rise to AI that can autonomously generate various types of content. "Generative AI" is a collective term for AI technologies that can

autonomously generate text, images, sound, and more. This field gained particular attention following the announcement of the conversational AI "ChatGPT" by OpenAI in 2022.

Section2 Evolving technologies along with the progress of AI

The evolution of AI, as reviewed in the previous section, is also influencing other technologies. Particularly, the development of deep learning during the third AI boom has contributed to the development of virtual space services using extended reality (XR), service robots, autonomous driving, and more. The advent of generative AI further supports the advancement of these technologies.

■ **Figure 4: Changes in evolving technologies along with the progress of AI**

Chapter4 Issues and Current Responses to Digital Technologies

Section1 Issues and current initiatives along with the advancement of AI

Although the development of AI has brought convenience to our lives, it also comes with risks and challenges that need to be considered. In the past, using inappropriate or biased data for training AI models has led to increased bias and errors, resulting in decreased reliability of predictions. Many traditional machine learning models have also been criticized for being black boxes (lack of transparency), making it difficult to understand their internal workings and potentially causing issues in critical decision-making scenarios. Additionally, as generative AI rapidly develops and becomes more widespread, specific challenges and risks have become apparent.

1. Issues of generative AI

The "AI Business Guidelines (Version 1.0)" formulated by the MIC and the Ministry of Economy, Trade and Industry (METI) in April 2024 provide examples of risks that have become apparent due to the use of generative AI, in addition to the risks associated with conventional AI. Additionally, there is a risk of perpetuating biases and amplifying prejudices present in existing information if AI-generated responses based on such information are uncritically accepted.

The development of Large Language Models (LLMs), which form the foundation of generative AI, is being led by major tech companies such as Microsoft and Google in the U.S.. However, simply utilizing LLMs developed through closed research and development by non-Japanese entities other than Japan may lead to the black-boxing of the LLMs construction process, raising concerns about rights infringement and information leakage when

utilizing LLMs. To ensure the effective utilization of LLMs with a strong focus on the Japanese language, it is essential to have domestically developed LLMs with high transparency, where the construction process and the data used are clearly visible, providing a sense of security. Some Japanese companies are already independently working on LLMs development.

2. Issues caused by generative AI
(1) Challenges and countermeasures for the circulation and spread of dis-/mis-information

In recent years, the use of deepfakes for information manipulation and criminal activities has been increasing worldwide, and efforts to address this issue are being made from various quarters.

In Japan, the MIC has been holding discussions since 2023 on ensuring the healthiness of information circulation in the digital space in the "Study Group on Ensuring the Healthiness of Information Circulation in the Digital Space".

Technological measures include the development of the Originator Profile (OP) technology, which links information content such as news articles and advertisements to the originator's information.

Section2 Responses to AI by country

In the midst of the rapid proliferation of AI, including generative AI, addressing the ethical and societal issues that have arisen requires collaborative efforts not only domestically but also internationally.

1. Trends in international discussion

Our country has been at the forefront of discussions in G7/G20 and the Organization for Economic Co-operation and Development (OECD), playing a significant role in formulating AI principles. G7 Hiroshima Summit held in 2023, and the leaders' communiqué at the summit instructed the establishment of the Hiroshima AI Process for discussions on generative AI. In December of the same year, a Comprehensive Policy Framework for the Hiroshima AI Process, including Project-Based Cooperation on AI," etc., were announced.

2. Trends in creation of legal rules and guidelines by country

Discussions on legal frameworks and international standards related to AI are actively taking place in various countries around the world. The year 2023 has become a significant milestone for AI policy, marked by the adoption of the EU AI Act by the European Parliament, the issuance of an executive order on AI safety in the U.S., and the publication of draft guidelines for AI-related businesses in Japan. In the establishment of regulations for rapidly evolving technologies, it is essential for governments to take the lead while also requiring voluntary efforts from AI businesses. This dual approach of public and private sector collaboration is currently being advanced.

In Japan, in May 2023, the government established the "AI Strategic Council" to discuss various themes such as addressing AI risks, optimal AI utilization, and measures to strengthen AI development capabilities and began work on integrating guidelines from various ministries. The "AI Guidelines for Business Ver 1.0"

were published on April , 2024.

Additionally, Japanese Prime Minister Kishida announced the establishment of the "AI Safety Institute" (AISI) in Japan, similar to institutions in the U.S. and the UK, in response to the growing international concern over AI safety. On February, 2024, the AISI was established under the Information-technology Promotion Agency (IPA). The AISI will collaborate with similar institutions in the UK, the U.S., and other countries to develop standards and guidance to improve the safety of AI development, provision, and utilization, conduct research on AI safety evaluation methods, and investigate technologies and case studies related to AI safety.

Chapter5 Penetration of Digital Technologies

### Section1 Status of use by the citizens and corporations

1. Generative AI
(1) Questionnaire to the general public

The MIC conducted a survey on the usage of "Digital Technology," including generative AI, among citizens of Japan, the U.S., China, Germany, and the UK. According to the survey, the percentage of respondents in Japan who reported "Using" generative AI (including those who have used it in the past) was 9.1%, which was lower compared to other countries.

On the other hand, when asked about their willingness to utilize generative AI in their future lives and leisure activities, the percentage of respondents in Japan who indicated "already

■ **Figure 5: Experiences to use generative AI**
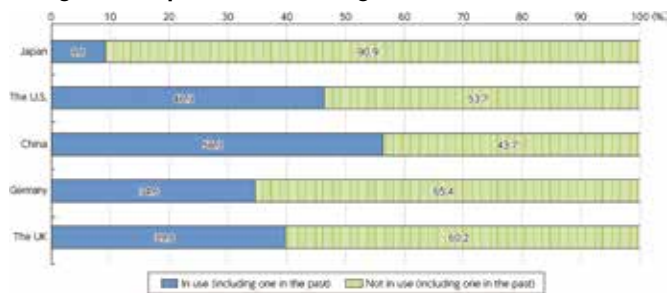
(Source) MIC(2024) "Research and study on the advancement of digital technologies and their utilization"

■ **Figure 6: Willingness to use generative AI**
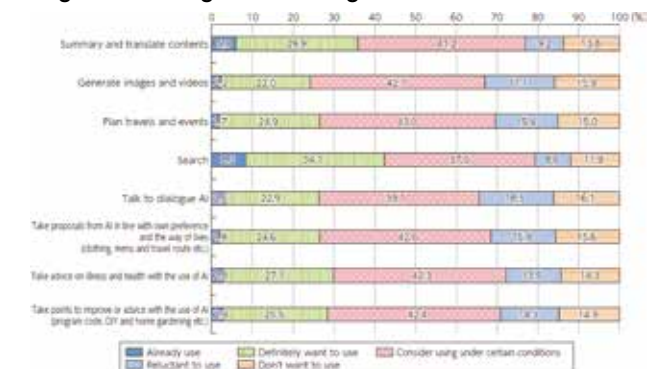
(Source) MIC(2024) "Research and study on the advancement of digital technologies and their utilization"

using it" was low. However, around 60-70% expressed an interest in using generative AI in the future, with some stating that they would "definitely like to use it" or "consider using it depending on the conditions," indicating potential demand for such services.

(2) Questionnaire to corporates

This survey was also conducted targeting businesses in each country to inquire about the utilization of generative AI in their operations. When asked whether they had established a policy for utilizing generative AI, 42.7% of Japanese companies responded that they had "established a policy for utilizing it" (combining those who actively utilize it and those who use it in limited areas).
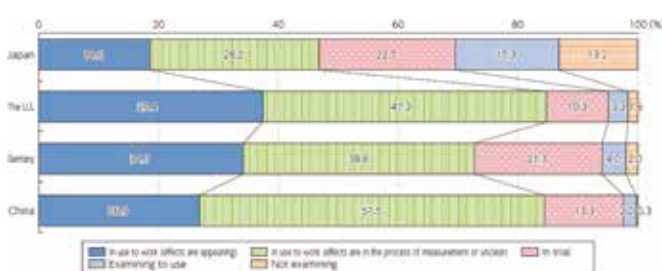
■ **Figure 7: Status to establish a policy for utilizing generative AI**
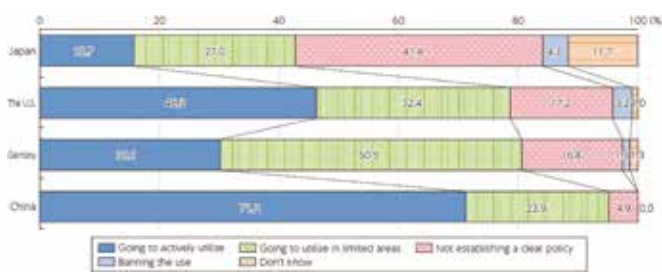
(Source) MIC(2024) "Research and study on the latest trends in information and communication technology research and development, as well as digital utilization, both domestically and internationally"

When asked about the utilization of generative AI in specific business operations, such as "assistance in email, meeting minutes, and document creation," 46.8% of Japanese companies reported using generative AI in their operations. Indicating that overseas, active utilization has begun in various areas, including customer support, while Japanese companies are proceeding with cautious adoption, particularly for internal operations.

■ **Figure 8: Status to utilize generative AI in business operations (support for creation of mail, minutes and material)**

(Source) MIC (2024) "Research and study on the latest trends in information and communication technology research and development,as well as digital utilization, both domestically and internationally"

Chapter6 Toward Living Further in Harmony with Digital Technologies

Various digital services utilizing AI are increasingly permeating our lives, and technologies such as the metaverse, robotics, and automated driving are expected to contribute to solving various social and economic issues faced by our country, such as regional revitalization and disaster prevention.

1. Promotion of use of digital technologies to strengthen industrial competitiveness and solve social issues

Digital technology is an indispensable element for strengthening industrial competitiveness and solving social issues. (i)To promote its use in different fields, the MIC will enhance AI computing resources, expand and improve high-quality data, and advance research and development of foundational models (to strengthen AI development capabilities). (ii)The use of digital technologies for addressing societal challenges on a case-by-case basis will be promoted. (iii)Enhancing transparency and improving fairness in the market environment and user protection will be promoted, etc.

2. Ensuring the healthiness of information circulation in digital space, improving the literacy and developing human resource

In the increasingly complex digital space due to generative AI, ensuring the healthiness of information flow is crucial, as is improving skills to effectively use technologies. (i) The MIC will consider responses to the distribution and spread of dis-/mis-information, involving a wide range of stakeholders, including platform operators. (ii) Measures to improve literacy so that citizens can appropriately send and receive information will be promoted. (iii) The development and skill enhancement of human resources who can appropriately and proactively use digital technologies will be promoted, etc.

3. Realization of communication network which is a foundation of digital technologies

In response to the structural changes in networks driven by AI and the proliferation of new services such as the metaverse, the need for a stable communication network is increased. (i) The MIC will promote initiatives towards Beyond 5G, which enables ultra-high-speed, ultra-large-capacity, ultra-low-latency data transmission, and low power consumption. (ii) Building communication networks for the realization of autonomous driving will be promoted, etc.

4. Creation and application of rules and international cooperation to ensure safe, secure and reliable use

It is important to collaborate with the international community to promote and establish standards and rules in the borderless digital space. (i) Raising awareness of the AI Guidelines for Business and considering the institutional framework as the whole of the government will be promoted. (ii) The lead in initiatives related to AI governance will be taken, collaborating with other countries while promoting the dissemination and expansion of the achievement of the Hiroshima AI Process.

= A Serial Introduction Part 2 =
Winners of ITU-AJ Encouragement Awards 2024

In May every year, The ITU Association of Japan (ITU-AJ) proudly presents ITU-AJ Encouragement Awards to people who have made outstanding contributions in the field of international standardization and have helped in the ongoing development of ICT.
These Awards are also an embodiment of our sincere desire to encourage further contributions from these individuals in the future.
If you happen to run into these winners at another meeting in the future, please say hello to them.
But first, as part of the introductory series of Award Winners, allow us to introduce some of those remarkable winners.

Sugasawa Koichi

NTT e-Asia Corporation
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Fields of activity: Telecommunication Infrastructure

Building and providing high-quality Japanese optical telecommunications infrastructure through joint projects with local partners in Binh Duong province, southern Vietnam

I am sincerely thankful for receiving this prestigious award and would like to express my gratitude to everyone at the ITU Association of Japan and all others involved.

I began working in the region in 2019, as part of a joint project with Vietnam Technology and Telecommunication (VNTT), our partner, and focusing on technology transfer, planning and execution of training, and facility design and construction to provide high-quality Japanese optical telecommunications infrastructure.

To build such high-quality facilities, we first conducted site surveys and created standard manuals for design/construction/inspection suited to the actual sites. We also invited specialists from NTT East to Vietnam to conduct on-the-job training to improve technical capabilities of VNTT, which would be responsible for construction. Training in Japan was also planned and conducted for VNTT technical staff, to be specialists who could transfer technology and know-how to improve service quality in Vietnam.

Then, through continuous instruction to maintain the techniques learned, and operational improvements based on monthly fault analyses, we were able to greatly reduce fault rates and contribute to improved customer satisfaction.

We are still providing quality Japanese optical telecommunications infrastructure in new development areas, and I will continue working to develop the experience and know-how that I gained in this project broadly in other regions and countries and bring high-quality communications environments to many more people.

Yasuki Suzuki

KDDI Corporation Standard Strategy Department, Group Leader
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Fields of activity: 3GPP RAN, O-RAN Alliance

Contributions to 3GPP RAN, O-RAN Alliance Standardization

It is a great honor to receive this ITU Association of Japan Encouragement Award. I would like to sincerely thank everyone at the ITU-AJ and everyone else involved.

Since I joined KDDI in 2010, I have been working on commercial development of radio base stations for the mobile network and standardization with 3GPP and the O-RAN Alliance. For RAN4 at 3GPP, I gathered requirements from Japanese and foreign operators regarding Non-collocated intra-band EN-DC/NR-CA* in Release 18, negotiated with device vendors and telecommunication equipment vendors, and finally reached agreement on starting standardization work (establishing a work item). I then promoted the standardization work as the rapporteur, working to organize and consolidate the results. The process of finding points of compromise, and the extremely heated discussion with the operators, device vendors and telecommunication equipment vendors, each with their own perspective and different focus, left a strong impression on me. I continued these efforts as the rapporteur for Release 19, endeavoring to restore the presence of Japanese enterprise in this process.

For about two years starting in 2020, I also participated in the O-RAN Alliance, working on an Open Fronthaul specification that could be used in Japan, with efforts such as proposing an O-RAN Open Fronthaul interconnectivity test specification.

Currently, discussion of Release 19 as 5G-Advanced is ongoing at 3GPP, but starting in 2025, there are plans to begin studying implementation of Beyond 5G as Release 20. At KDDI, we are contributing to creating value for customers and addressing societal issues with Beyond 5G in the 2030s. As part of that, I will work to use the experience I have gained in standardization of 4G and 5G to make even a small contribution to standardization of Beyond 5G.

＊ Non-collocated intra-band E-UTRA-Dual Connectivity/New RAT-Carrier Aggregation
- Informally called "non-collocated", this is a new technology that enables EN-DC, NR-CA between two 3.5 GHz to 4.0 GHz band base stations, even when they are physically separated.
- Enabling two separated radio base stations to use EN-DC, NR-CA, can contribute to both promoting the spread of 5G, by expanding 5G areas using 5G Non-stand Alone (NSA), and also by expanding areas where NR-CA is introduced for 5G Stand Alone (SA), increasing the effective speed of 5G SA. In both of these cases, user through-put and efficiency of frequency utilization can be increased.

Momoko Suyama

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Fields of activity: ITU-R SG4, SG5, SG6

Activities at the ITU

I am very honored to receive this Encouragement Award from the ITU Association of Japan. I would like to express sincere thanks to everyone at the ITU-AJ and all others who have offered their guidance.

When I first participated in ITU meetings in November, 2021, the effects of COVID-19 were still being felt, and events were still being held on-line only. It was my first time participating in an international assembly, and I remember being overwhelmed by the openness of the discussion among delegates from each country.

I participated mainly in discussion related to satellite broadcasting in the WRC 23 meeting. NHK began regular satellite broadcasting in 1989, started 4K8K broadcasts in 2018, and had many viewers, so it had become an important means of delivering high-quality broadcasts to viewers all over Japan. However, with recent unstable conditions in the world, there had been a rapid increase in global demand for satellite bandwidth. As such, we engaged in discussion from the perspective of ensuring that we could continue delivering reliable satellite broadcasts, now and into the future. Through relentless discussion and persistent negotiation, we finally achieved a result in which most of the proposals from Japan were adopted.

I intend to continue in these efforts, utilizing the experience I have gained working with the ITU-R.

ITU

The ITU Association of Japan