Technology

Overview

Basic Approach

Sony conducts research and development as a creative entertainment company with a solid technological foundation with the aim of "filling the world with emotion through the power of creativity and technology." Sony believes it is essential to understand the motivations of creators and users in order to fulfill its management objective of creating technology that gets closer to people. To help solve the problems faced by humanity, society, and our planet, we will contribute through Sony Group's diverse products, content and services, which people and technology are constantly improving.

Structure

R&D

Based on Sony Group's R&D mission to "Push our civilization forward and make this planet sustainable" and the direction of our technology—"We are here for creators", we consider all people who pioneer the future as creators, including researchers and entrepreneurs, and we are engaged in research and development activities to expand their creativity. Sony is prioritizing R&D that enables creators to fully apply their creativity and convey their ideas to diverse users around the world. The three domains of sensing, AI, and the digital virtual world, as well as integration among them, will be the core to realize this. In addition, by developing large AI models to accelerate progress in these three domains, Sony will transform itself as an AI and data-driven company.

To create technology that brings *kando* (emotion) to a diverse range of people, we also emphasize diversity within our organization. In addition to conducting R&D activities at multiple sites across Japan, China, India, Europe, and the United States, each taking advantage of regional characteristics and strengths, we will continue to recruit talented researchers from around the world. These diverse organizations constitute the Sony R&D ecosystem which aims to contribute towards creating value for the Sony Group, and we will further strengthen our collaborations with creators as well as academia to pioneer a better future together.

Technology That Inspires Emotion

Sony Computer Science Laboratories

Sony Computer Science Laboratories, Inc. (Sony CSL) was established in 1988 to pioneer new research fields and paradigms, as well as new technologies and businesses, for the good of humanity, society and our planet. Sony CSL gives free rein to its researchers and is committed to creating a better future via creative and imaginative research.
As of 2024, Sony CSL is researching a diversity of themes at its laboratories in Tokyo, Paris, Kyoto and Rome, ranging from social issues in areas such as ecosystems, urban planning, and energy to augmentation of human capabilities and creativity. It strives to channel the fruits of its research back into society.

Sony CSL

Sony Computer Science Laboratories

Sony Research

Sony Research Inc. was founded in April 2023 with the mission to "pioneer the future of creation." It undertakes the research and development of disruptive technologies that aims to empower creators around the world to maximize their creativity, IP value, and fan engagement. Sony Research defines creators in the largest possible sense and aims to develop technology that can also make fundamental societal contributions. The company includes Sony AI, which was founded in 2020 and will initially focus on projects in the realm of sensing, AI, and digital virtual spaces. Going forward, the scope of research will be expanded to include new fields and greater challenges. Recognizing the power and influence that AI can have on society, Sony Research aims to contribute by developing AI that is responsible, fair and transparent.

Sony Research

Sony Establishes Sony Research to Undertake Unprecedented Disruptive Research in Sensing, AI and Digital Virtual Spaces

Programs

Sony Startup Acceleration Program (SSAP)

The Sony Startup Acceleration Program (SSAP) was launched in 2014 as a program to support the creation and operations of new businesses within Sony, and began providing services outside the company from fiscal year 2018. With Sony's employees serving as experienced accelerators, SSAP provides seamless support from ideation to commercialization for Sony Group companies, external organizations (including major corporations), venture companies, SMEs, non-profits (NPOs), and educational institutions. Thus far, SSAP has provided new business acceleration services in more than 600 cases to hundreds of companies across 24 industries, creating 27 new businesses from scratch, with over 400 people using its incubation program. SSAP engages in open innovation with companies and organizations, and aims to bring people's ideas to life and create an affluent and sustainable society.

Sony Startup Acceleration Program

Sony Startup Acceleration Program (in Japanese)

Sony Innovation Fund

Sony has participated for many years in the global ecosystem for creating new businesses and supporting the business growth of venture companies. It established the Sony Innovation Fund in 2016, the Innovation Growth Fund in 2019, the Sony Innovation Fund: Environment in 2020 to support companies tackling global environmental issues, and in 2021 launched an innovative program to support ESG initiatives by companies that it invests in. Sony Ventures Corporation, established in July 2021, launched Sony Innovation Fund 3 L.P. in February 2022. This new investment fund, which completed a final closing with a total of 26.5 billion yen, invests in venture companies in industries that are expected to show strong growth. The new fund brings the total Assets Under Management (AUM) to over 60 billion yen. Sony Innovation Fund 3 L.P. is intended to contribute to social progress and the creation of sustainable societies via ESG-focused investment and support for venture companies.

Sony Innovation Fund

Sony Innovation Fund

News Releases: Sony Ventures Corporation Completes final closing of the "Sony Innovation Fund 3 L.P." (SIF3) with a total of 26.5 billion yen

Sony Research Award Program

Sony Research Award Program is an open innovation program for research and development. The program is open to universities and research institutions in North America, Europe, and India, and calls for research proposals, sponsoring grant awards recipients with research funding and opportunities to collaborate with Sony's diverse R&D organizations. Launched in 2016 for North American universities, the program has expanded to cover more regions and research institutions and granted awards to a total of 168 research projects by fiscal year 2023. It contributes to making Sony's R&D advanced and promoting R&D on innovative technologies and their implementation in society on a global scale.

SONY RESEARCH AWARD PROGRAM

Sensing Solution University Collaboration Program (SSUP)

Sensing Solution University Collaboration Program (SSUP) is a program that, with the keywords of "Sensing" and "Collaboration," offers joint research and research support through the free lending of research equipment for research themes that use Sony Semiconductor Solutions Corporation's sensing solutions, as well as related activities to encourage co-creation and to support education. It aims to create a better future and bring surprise and excitement to people, sensing the world with Sony's devices such as low-power consumption microcontroller computers and cameras, to derive solutions for real-world problems as well as to create entertainment. Beginning in 2019, SSUP has globally conducted joint research with 54 university laboratories (34 in Japan and 20 overseas) by fiscal year 2023.

SSUP

Sensing Solution University Collaboration Program

Technology for Sustainability

Sony regards working to realize a sustainable society as a key theme and is conducting technological development to solve both environmental and social issues.

Projects

IoT for a Sustainable Society: Sony's Earth MIMAMORI platform

In order to realize a sustainable society, it is necessary to constantly protect various regions such as mountain forests, satoyama (woodlands surrounding rural settlements), rivers, and coasts. Achieving this aim also requires the detection of anomalies to prevent problems from arising, instead of addressing environmental issues after they have already arisen. Such systems can only be realized through the ability to acquire and transmit data in a global sensor network extending to mountainous and coastal areas not serviced by conventional mobile networks. They also require devices and networks that can function in areas where electricity service is difficult.
Sony has a range of technologies to realize these systems, including :

- IMX500, an intelligent vision sensor equipped with AI processing functionality
- Low-power edge AI devices such as SPRESENSE™ that offer advanced sensing in a battery-powered device
- ELTRES™-compatible radio signal processing technology that enables low power and low bit rate data transmission with a range of over 1,000 km
- Prediction One, an analysis tool that makes useful predictions from the data collected
- A wafer-level diode-pumped solid-state surface-emitting laser, which can be used in atmospheric monitoring to sense particles invisible to the eye

and more besides.

Combining these technologies enables sensing all around the world, even in locations where humankind is not active. The data from such sensing can be collected by low Earth orbit satellites and the necessary information relayed to human society via AI processing. Sony calls this concept MIMAMORI and is engaged in research and development to make this mechanism to change human behavior patterns a reality. Within frameworks such as a comprehensive alliance with the Japan International Cooperation Agency (JICA), and the Social Innovation Division for Planetary Boundary jointly established with Hokkaido University, Sony is collaborating with external partners in joint research and trials at various locations around the globe. In March 2023, Sony signed a letter of intent with Thailand's Geo-Informatics and Space Technology Development Agency (GISTDA) to work towards building a system to alleviate damage caused by natural disasters. These projects will help to prevent environmental destruction and predict emergencies such as river flooding and wildfires, as well as increase agricultural and livestock productivity.

MIMAMORI, a proposed global sensing solution to detect anomalies and take preventative action

- Sony's Earth MIMAMORI platform
- ELTRES
- News Release: Wireless Experiment System Compatible with Sony's Proprietary Low-Power Wide Area (LPWA) Communications Standard ELTRES™ Successfully Received Signal in Space (in Japanese)
- Prediction One (in Japanese)
- News Release: Hokkaido University and Sony Group Open the "Social Innovation Division for Planetary Boundary"
- News Release: Sony Awarded Minister for Internal Affairs and Communications Award at Japan's 6th Space Development and Utilization Awards (in Japanese)

STAR SPHERE, New Perspectives of Earth

In August 2020, Sony announced that it would begin developing a nano satellite that could be operated from the ground to capture the earth and stars. Development has been completed under a joint demonstration agreement with the Japan Aerospace Exploration Agency (JAXA) and the University of Tokyo.
Until now, space missions have been used mainly for industrial purposes such as planetary exploration or space communication and surveys, and only a few people, such as astronauts, have experienced manned space flights. Believing that it is important for anyone to experience the universe for themselves and see Earth in a new light, as a planet in space, to help humanity create sustainable societies and find solutions to environmental issues, Sony, the University of Tokyo, and JAXA founded the STAR SPHERE project. In January 2023, STAR SPHERE's nano satellite EYE was launched from Florida, USA. Starting in February 2024, Sony has offered Space Photography Experiences to the general public through the web application EYE CONNECT (this service is currently available in Japan only), which is used to operate EYE. Sony has also held space-related educational events entitled the Earth Childlens Project in Saga and Kanagawa prefectures. By enabling people to discover unfamiliar aspects of the Earth, such as the expressive colors of the atmosphere, STAR SPHERE will create more opportunities for everyone to feel closer to space, and to think about our planet and environment. Photos taken with EYE can be viewed in EYE CONNECT.

Picture taken by the nano satellite EYE

- STAR SPHERE-Space Inspiration Project
- EYE CONNECT
- Earth Childlens Project (in Japanese)

Synecoculture™*1 and Augmented Ecosystems

Conventional agriculture largely focuses on increasing productivity from a single crop by plowing topsoil, spreading fertilizer, and applying agrochemicals. These practices damage ecosystems and cause environmental problems. Sony CSL successfully conducted demonstration tests for Synecoculture, a new agricultural practice that balances productivity and biodiversity, moving closer toward sustainability. Synecoculture has the potential to have a major global impact and is already contributing to desert greening and supporting local economies in the Sahel region in Africa, and helping to enhance food production and environmental conditions in China and South America.
Synecoculture eliminates the need for plowing, fertilizing, and agrochemical use that impact the environment, by using material cycling that occurs naturally in ecosystems in a multifaceted manner, aiming to create rich ecosystems with a diverse mix of plants that coexist together and grow vibrantly.
Sony CSL is also working to supply new value through augmented ecosystems, which expand the applications for Synecoculture beyond food production to the creation of ecosystems with diverse objectives and functions. The project supports education to enhance the understanding of natural environments and adds new value to the basic infrastructure of urban and living spaces.
SynecO Inc. was established to support the implementation and dissemination of Sony CSL's research.
SynecO is working to create sustainable environments and industries based on the renewable natural capital in which society should be rooted. Its activities include a reforestation pilot project on the island of Sumatra.

*1 Synecoculture is a trademark of Sony Group Corporation.

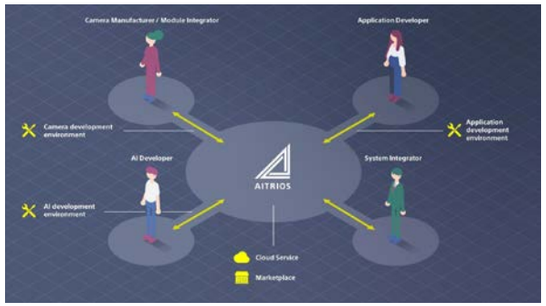
Method of open-field agriculture and augmenting ecosystems utilizing the self-organizing power of the ecosystem

- Synecoculture™ and Augmented Ecosystems
- News Release: New Company Founding: SynecO, Inc.
- News Release: Launch of Pilot Project to Utilize Synecoculture™ for Forest Restoration in Sumatra

Products

Edge AI Solutions to Help Solve Social Issues

In May 2020, Sony Semiconductor Solutions Corporation (SSS) announced the commercial release of its IMX500 intelligent vision sensors, the first image sensors in the world*2 to be equipped with AI processing functionality. They feature a stacked configuration consisting of a pixel chip and logic chip, which are key technologies of SSS image sensors. The logic chip is equipped with SSS's proprietary DSP (Digital Signal Processor) dedicated to AI signal processing, and embedded memory for the AI model.
The spread of the IoT has made cloud AI processing systems commonplace. However there is concern that this will lead to increased CO_2 emissions as IP traffic and data center electricity consumption rise due to higher data volumes from the growing number of IoT devices. Edge AI processing addresses these problems by processing and analyzing data on the devices themselves.
SSS developed the IMX500 to be capable of outputting the desired metadata as semantic information. Only necessary data is extracted, reducing data transmission latency, power consumption, and communication costs. Privacy concerns are also addressed by not outputting information that can identify an individual.



AITRIOS edge AI sensing platform

In late 2021, Sony launched the AITRIOS™*3 AI sensing platform to accelerate the development of solutions using the IMX500 and various other image sensors. AITRIOS is a one-stop platform that provides various partners involved in development with all the features they need to efficiently develop and deploy solutions. The platform supports partners in efforts to build optimal systems in which the edge and the cloud function in synergy and address global environmental issues, thereby helping to solve issues with cloud systems.
Services using IMX500 and AITRIOS have already started in fields such as logistics, retail and manufacturing. One example is an edge AI-driven vision detection solution for retail stores.
Implementation of this AITRIOS visual detection solution at 500 major convenience stores and other locations began in April 2024, aiming to improve digital signage systems by providing insight into aspects such as the number and percentage of people who view signage while addressing privacy concerns.
In the field of logistics, services designed to enhance efficiency at warehouse loading/unloading areas (berths) began in November 2023. A combination of SSS's edge AI technology with Hacobu, Inc.'s MOVO Berth truck reservation service and a web application from Restar Corporation has enabled the automatic collection of data such as transportation truck berth usage records and working time data with the aim of addressing the issue of transportation capacity shortages faced by the logistics industry as a result of working hour regulations in Japan.

*2 Among image sensors. According to Sony research (as of announcement on May 14, 2020).
*3 AITRIOS and AITRIOS logos are the registered trademarks or trademarks of Sony Group Corporation or its affiliates.

- News Release: Sony to Release World's First Intelligent Vision Sensors with AI Processing Functionality*2
- AITRIOS | Edge AI Sensing Platform
- News Release: Edge AI-Driven Vision Detection Solution Introduced at 500 Convenience Store Locations to Measure Advertising Effectiveness
- News Release: Edge AI-Driven Service to Improve Efficiency at Sony Semiconductor Solutions, Hacobu, and Restar Electronics Warehouse Berths Launched (in Japanese)

OTC (over-the-counter) Hearing Aids

Sony Corporation's self-fitting OTC hearing aids were launched in the U.S. in October 2022, in partnership with WS Audiology. OTC hearing aids are newly approved hearing aids in the U.S. that can be purchased without professional prescription or intervention for people with perceived mild to moderate hearing loss over the age of 18. In the U.S., the low prevalence of hearing aid use is an issue. Less than 20%*1 of people aged 20–69 who need hearing aids actually wear them. Some studies show that hearing loss may increase the risk of developing dementia, which means hearing care is an important issue to address in order to extend people's healthy life expectancy. The advantages of OTC hearing aids are affordability, ease of purchase at mass retailers or online stores, and easy self-fitting.
During the initial stage of product development, we considered we could apply Sony's headphone designs to hearing aids, but we found that people with hearing loss have unique needs and challenges through a series of in depth interviews. Based on these findings, we created discreet, sleek and ergonomic designs to encourage people to want to wear the hearing aids, and developed a user-friendly smartphone app for improved usability.
We will continue to combine Sony's technologies and expertise in the development of OTC hearing aids with the aim of providing hearing experiences that deliver "*Anshin*" and "*Kando*" to enrich human life.

*1 Quick Statistics About Hearing. (2021, March 25). www.nidcd.nih.gov. Retrieved October 11, 2022, from https://www.nidcd.nih.gov/health/statistics/quick-statistics-hearing

CRE-E10 OTC Hearing Aids

- News Release: Sony and WS Audiology Have Entered into a Partnership Agreement in the Over-the-Counter Self-Fitting Hearing Aid Business
- Sony Electronics Launches its First Over-the-Counter Hearing Aids in the US and Makes Hearing and Improved Accessibility Options for Consumers a Reality
- Aiming for Over the Counter ("OTC") Hearing Aids Where Everyone Can Share the Moment, for Richer Conversations and Experiences
- Reference: Quick Statistics About Hearing, Balance, & Dizziness (National Institute on Deafness and Other Communication Disorders)

NOS-DX1000 Next-gen Olfactometry System Contributing to Longevity with Proprietary Odorant Control Technology

According to a report by Japan's Ministry of Health, Labour and Welfare, one in five elderly people in Japan will have dementia in 2025, making it critical to detect the disease early and control its progression. Several studies report that a drop in olfactory ability is one of the symptoms that heralds the onset of Alzheimer's disease or Lewy body dementia. This indicates that smell testing could play a role in the early detection of the disease.
In March 2023, Sony Corporation released the NOS-DX1000 Next-gen Olfactometry System. Previous methods of measuring the sense of smell had drawbacks such as requiring 30 or more minutes for measurement, contaminating rooms with odors, or only being usable in certain facilities. Sony's product uses the proprietary Tensor Valve™*2 technology, which prevents odor leakage, to digitally transform processes of smell testing and measurement in an easy-to-use manner without odor contamination.
Smell testing performed with NOS-DX1000 has significant potential in the medical field as a screening method that can contribute to early detection of dementia that places little burden on patients and medical staff, and research focused on the link between reduced olfactory ability and neurodegenerative diseases is ongoing. The product's applications in providing smell testing relating to Lewy body dementia and Parkinson's disease were presented at the 64th Annual Meeting of the Japanese Society of Neurology in May 2023 and the 17th Congress of the Movement Disorder Society of Japan in July of the same year. A health checkup facility in Nagoya has also began offering smell testing with NOS-DX1000 as an optional additional health check in February 2024. Moving forward, this olfactive technology will continue to contribute to medicine and health care through use in olfactory research at medical and research institutions.

*2 Tensor Value is a trademark or registered trademark of Sony Group Corporation.

Olfactometry with the NOS-DX1000

- Olfactive Technologies

Camera Authenticity Solution to Enhance Transparency and Trustworthiness in News Workflows

With the rapid advancement of generative AI, the spreading of fake images and false information may have a significant negative impact on society as a whole. Addressing this issue is key to ensuring transparency and trustworthiness, especially in the field of news reporting.
To aid in the fight against manipulated imagery and AI-generated fakes, Sony delivers Camera Authenticity Solution, the proprietary in-camera digital signature and C2PA*3 (Coalition for Content Provenance and Authenticity) format support, which make it possible for news agencies to ensure the authenticity of images, contributing to industry efforts to protect creators, and society from fake imagery. This will initially be offered to select news media agencies, expanding to other agencies at a later date.
Starting in March 2024, Sony delivered highly anticipated firmware updates for the Alpha 1, Alpha 7S III, Alpha 7 IV, and the Alpha 9 III. These updates contain some of Sony's most impactful technology, including Camera Authenticity Solution, the proprietary in-camera

digital signature that signs images in real-time and C2PA*3 (Coalition for Content Provenance and Authenticity) format support. This new feature certifies the authenticity of an image at the point of capture and creates a 'digital birth certificate' that is retained throughout revisions. Sony's solution also helps protect the authenticity of content by including an Image Validation Site, which verifies the image even after edits have been made by C2PA-compliant editing software. The signature contains metadata including 3D-depth information captured through the proprietary technology in the image sensor developed by Sony. This depth information can show if the image captured was of an actual 3D object, or a photograph of an image or video, providing an extra level of protection and even more assurance of the content's authenticity and making Sony's solution especially unique for photojournalists and news agencies.

*3 C2PA is a Joint Development Foundation project that aims to develop an end-to-end open technical standard to provide publishers, creators and consumers with opt-in, flexible ways to understand the authenticity, and provenance of different types of media.

News Release: Sony Electronics Delivers Firmware Updates including C2PA Compliancy as a Next Step to Ensure Authenticity of Images

Image Sensors Equipped with Global Shutter Technology for Automatic Reverse Vending Machines

Sony Semiconductor Solutions (SSS) supplies image sensors fitted with the global shutter technology Pregius™ to TOMRA, which is engaged in resource collection and recycling projects around the world. TOMRA uses the sensors in its reverse vending machines for plastic bottles.
Accurate sorting is an essential part of resource recycling, and TOMRA's reverse vending machines for plastic bottles and other drinks containers required high-speed, accurate sorting based on characteristics such as shape, material and barcodes. Conventional image sensors produce distortion when capturing high-speed objects, meaning they did not meet the required standard.
To meet the challenges TOMRA faced in creating its reverse vending machines, SSS has supplied image sensors equipped with its proprietary global shutter technology capable of capturing fast-moving subjects without distortion. This enables accurate reading of a bottle's shape and barcode in about one second, contributing to effective sorting and resource recycling.

Customers putting used bottles into a reverse vending machine from TOMRA

Sony Supplies Image Sensors for TOMRA Reverse Vending Machines

Material

Licensing of Triporous™

Triporous is a plant-based porous carbon material with excellent adsorption qualities. Sony obtained end-to-end patents on this material and began licensing Triporous in 2019. Triporous is made from rice husks, of which Japan alone generates around two million metric tons per year, and this excess biomass is part of approximately 100 million metric tons generated annually worldwide. Manufacturing Triporous can reduce air pollutants and greenhouse gases more than using incinerator disposal. Thanks to its microstructure derived from rice husks, Triporous has unique adsorption properties different from those of conventional activated carbon. Triporous has been shown to be highly effective in adsorbing surfactants commonly contained in factory and domestic wastewater, and some perfluoroalkyl substances (PFAS), which have become a prominent issue in recent years.
Triporous is expected to contribute to improving water circulation and soil environments. In water treatment, using Triporous in place of conventional domestic activated carbon filters helps to reduce filter replacement rates, systems costs and waste. Triporous is being used in deodorizing, antimicrobial fibers for apparel and in cleansers for healthcare. Triporous has also been selected for a project commissioned by the Japanese Ministry of the Environment, and its use is expected to become even more widespread. Sony will work with partners to apply Triporous to solve a variety of social issues and help to bring about a more environmentally conscious, recycling-oriented society.

Triporous, a new material made from rice husks

Triporous™ Official Website
Triporous's Environmental Performance
News Release: Sony Begins Licensing of New Material Triporous™
News Release: Triporous™ Selected for Functional Material Development and Demonstration Project Commissioned by Ministry of the Environment in Japan (in Japanese)

External Sales of SORPLAS™ Recycled Plastic

Sony commenced external sales of its proprietary Sustainable Oriented Recycled Plastic (SORPLAS)* in 2014. SORPLAS is a flame-retardant recycled plastic that offers excellent heat resistance, durability, and recyclability. It contains up to 99% recycled materials. SORPLAS was first used in Sony products in 2011 and has since been incorporated into a wide variety of Sony products.

Sony aims to promote the recycling of resources and help reduce the environmental impact of society as a whole by offering SORPLAS to other companies. Many companies are interested in using SORPLAS. So far, it has been adopted for a wide variety of products, including televisions, cameras, smartphones, computers, lighting fixtures, and daily necessities such as travel goods and stationery.

* SORPLAS is an environmentally conscious plastic developed and provided by Sony Semiconductor Solutions Corporation.

SORPLAS recycled plastic pellets (black), recovered pellets (transparent: right) and Sony's original flame retardant (left)

→ SORPLAS™, Sony's Original Flame-Retardant Recycled Plastic

News Release: Sony commences external sales of SORPLAS™ flame-retardant recycled plastic material that achieves high durability and heat resistance, and comprises up to 99% recycled content

Services and Systems

Implementing Open Xchange Systems in Society

Sony Computer Science Laboratories, Inc. (Sony CSL) conducted research, development, and demonstrations with its Open Xchange Systems (OXS) to promote decarbonization and biodiversity conservation through climate change mitigation. OXS combine Sony CSL's decentralized Open Energy Systems™ (OES) and educational programs including tools that visualize carbon dioxide emitting behaviors in daily activities. With these technological and design approaches, OXS aims to accelerate the use of renewable energy and trigger behavior changes that would lead to decarbonization.

One of the main actions taken with OXS was to publish the source code for the Autonomous Power Interchange System (APIS), the core module of the OES, as open-source software in 2020. The UMABA Project commenced in July 2021. This new power-sharing demonstration, which linked storage batteries and EVs over an AC electricity network, was conducted by an industry-academia-government consortium investigating environmentally conscious working vacations. The project was based in Umaba School Cottage, a working vacation facility in Miyoshi, Tokushima Prefecture, and had been working to facilitate decarbonization in the area.

Demonstration test in UMABA Project

Open Xchange Systems

Digital Cinema Systems

Previous film development required a massive amount of positive film, water and chemicals. To rectify this issue, Sony introduced the HDW-F900, the world's first 24P digital video camera for cinema production, back in the year 2000, and began offering 4K digital cinema projection systems consisting of projectors and other devices in 2007. Since then, we have continued to provide digital cameras to movie production sites and theaters worldwide. These cameras save both resources and power, and improve operation efficiency.

In terms of recent developments, Sony released the VENICE digital cinema camera in 2018. This camera fitted with a full-frame sensor was both smaller and lighter than conventional models, yet capable of 6K recording. This was followed in 2022 by VENICE 2, which supports internal recording in an even smaller, lighter body. In 2024, Sony released BURANO, designed with greater focus on high mobility optimized for shooting with small crews.

A BURANO digital cinema camera

VENICE Size and Weight Reduction Information

Virtual Production Technology

Sony provides virtual production technology to creators that has the potential to reduce environmental impact of content production. The technology enables in-studio filming that blends live-action footage with computer-generated imagery in real time to achieve the look of being on-location. The combination of large LED displays, cameras, camera tracking, and a real-time 3DCG rendering engine allows creators to shoot in front of a virtual 3DCG background image on the LED displays and combine CG and live action without post processing. According to Sony Pictures Entertainment, this technology could reduce greenhouse gas emissions approximately 52%* compared to on-location productions. In addition, 3DCG virtual backgrounds can be reused repeatedly to minimize waste.

* Assuming that no renewable energy is used

Virtual production shooting

Environmental Considerations in Content Production

Supporting Disaster Countermeasures and Infrastructure Inspections with Drones

Aerosense Inc., an affiliate of Sony Group, combines automated flight drones with cloud services to provide various industrial solutions. They enable high-precision drone surveying that helps save labor at civil engineering sites nationwide. This technology is also used for confirmation work in natural disaster response and prevention, bolstering national resilience by allowing damage to be quickly investigated during such events. In recent years, climate anomalies have driven an increase in natural disaster damage. Authorities need drones that can fly long distances to safely and efficiently make assessments of broad areas. One of the many current applications of Aerosense's vertical take-off and landing (VTOL) drones is inspecting infrastructure damaged by mountain landslides, such as power lines and roads.

In fiscal year 2023, Aerosense's proposal was adopted by the Japanese Cabinet Office's Key and Advanced Technology R&D through Cross Community Collaboration Program (K Program) and the Ministry of Land, Infrastructure, Transport and Tourism's Small Business Innovation Research (SBIR) project. As part of the K Program, development of a next-generation large VTOL drone is progressing towards expected completion in 2025. Expected applications include carrying materials during disasters and other emergencies, and surveying and inspection using high-precision sensors and cameras. Under the SBIR, as part of the National Disaster Resilience and Development and Demonstration of Wide-area, Strategic Infrastructure Management Technology project, Aerosense develops small VTOL drones capable of long-distance flight that are compatible with Class 1 UAS certification with the aim of revolutionizing the inspection of domestic infrastructure, including around roads and rivers.

Aerosense drone