• Hello, everyone. Thank you for joining our R&D strategy briefing today.

• Today, I would like to share with you our perspective on R&D, a key vehicle for value creation over the mid- to long-term at the Sony Group.
Push Our Civilization Forward and Make This Planet Sustainable

我々の文明を進歩させ、この惑星を持続可能にする

• R&D creates the future. Intellectual discoveries and new technologies have transformed our culture and civilization time and time again.
• However, that is not to say that technology has been a one-way agent of social change. The process has actually involved a complex interplay between technology and society.

• The inventions of the steam engine and internal combustion engine brought about the Industrial Revolution and, in so doing, changed the very fabric of society.
• By enabling mass production and long-distance travel, these inventions made our society incredibly rich in a material sense.
• At the same time however, these technological developments have had a huge environmental impact, forcing us to face issues such as climate change and the loss of biodiversity on a global scale—what we are calling our “Planetary Agenda.”

• In addition, the birth of digital computers and communication technology has made it possible for people all over the world to connect, and now, with various devices connected to the internet, we can instantly access the latest information and content from anywhere in the world.
• But there are also downsides. For example, it is said that this led to increased division in society due to the “echo chamber effect” that amplifies specific views.
Push Our Civilization Forward and Make This Planet Sustainable

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• Furthermore, with the accelerated evolution of biotechnology and artificial intelligence (AI), things that were previously thought to be impossible are being realized one after another.
• Cutting edge technology like this has great potential, but at the same time raises questions on how we should utilize it.
• I feel that humanity right now needs to ask itself what kind of future we are trying to create.
• One answer to that question is embodied in a Sony Group R&D mission statement: “Push Our Civilization Forward and Make This Planet Sustainable.”
• A keyword of Sony Group’s Purpose is “Kando” (emotion).

• What R&D can do to keep the world filled with “Kando” is to continue to create technologies that unleash people’s creativity, and contribute to the sustainability of our civilization as much as possible so that people can continue to feel “Kando” in the future.
Entertainment adds value to our civilization

- I think movies, music, games, sports, and other forms of entertainment, which we engage in, play key roles in our society by enriching people’s lives.

- By advancing entertainment through the development of cutting-edge technology, I believe we can contribute to pushing our civilization forward.
The social system forms the basis of our civilization

- In addition, our group portfolio includes image sensors and other semiconductors, as well as financial services and the medical businesses, and we are working on adding mobility to our portfolio, as well.

- We also have a range of group companies, including SynecO, Inc., which enables us to create new farming-related businesses delivering both biodiversity and stable food supplies; Sony Space Communications, which provides technology for the construction of optical communications networks leveraging low earth orbit satellites; and Sony Global Education, Inc., which promotes STEAM education.

- R&D in these businesses not only helps form our social infrastructure, but also advances fields that could make a major difference in contributing to the sustainability of society.
The role of Sony Group’s R&D is to make Sony “future-ready” by continually creating technologies that support existing business and enable new business development to fulfil Sony Group’s Purpose over the long term. In other words, it is to build a technological base for the company so it is ready to apply itself to what will happen in the future.

Also, to realize the Purpose and further develop it, I think that a research and development strategy that is consistent with our strategic objectives is important.
First, to help us achieve our objective to be the brand chosen by creators around the world, we plan to develop a certain suite of technologies.

In particular, this refers to technologies that realize 3 axes of maximization: help creators unleash the full extent of their creativity, maximize the value of their IP, and maximize fan engagement.

To us, the term “creator” does not refer only to artists and other professionals that produce entertainment. The term includes the researchers and engineers devising new technologies, entrepreneurs, and all innovators working hard to create a better future.
• The other goal is to connect directly with one billion people. The 3 axes of diversity are important in achieving this and we intend to work to produce technologies that allow us to convey the creator’s thoughts to many users with demographic and geographical diversity, diverse content preferences, and diverse cultural backgrounds including language.
• In order for us to fulfill this role, we need to utilize a wide range of technological domains. Three domains, and integration between them, will be our core drivers. They are sensing, AI, and digital virtual world.
• Thus, our sensing technology has to convert the real world into data, which will in turn train our AI to advance image and voice recognition, which is our first loop.

• Massive amounts of data (taken from the real world) and the use of AI will help us create virtual space, content, and characters, enabling the generation of fascinating content and high-precision simulations. This is where a large amount of new data will be generated.

• In addition, our second loop is that massive amounts of data (generated in those virtual spaces) will inform further AI training, thus bolstering the AI’s ability.

• We believe that connecting the two loops in virtual space and real space with AI will be an important technological backbone.

• By creating these loops, we aim to maximize the value of our business both in real space and virtual spaces. By realizing this “double flywheel” that leverages sensing, data, and AI, I believe we will transform Sony into an AI/Data-driven company.
• Let me show you some examples.

• No longer used solely to generate images for human consumption, CMOS image sensors now serve as the eyes of AI.

• In a smart city project in Rome using the IMX500 intelligent vision sensor, many sensors have been installed throughout the city to demonstrate image recognition for next-generation mobility in urban spaces.

• It is an experiment to make mobility more convenient and more sustainable.
• Also, it has become possible to acquire human movement data from a large amount of sensor information, build a precise 3D model by computer graphics, not by live action shooting but reconstructed from images, and move that model in a virtual space.

• This is an essential technology for games, movies, the metaverse, and more.
• Al is also important in the world of games, where precise virtual spaces are being realized.

• The first example of “superhuman” AI agent that contributes to enhanced enjoyment in the virtual space would be Gran Turismo Sophy (GT Sophy).

• Successfully developed by Sony AI, GT Sophy is an AI agent that outraces the human world champions on Gran Turismo, a hyper-realistic racing simulator.

• We created a large-scale computing system comprising thousands of PS4s to perform distributed deep reinforcement learning to train GT Sophy for several months.

• This is an example of how data in virtual space can enhance AI.

• And now our developers are working to incorporate GT Sophy into Gran Turismo 7 to improve the Gran Turismo gameplay experience.
• Furthermore, it is becoming possible to link real and virtual spaces.

• Our Virtual Production Studio, which makes full use of our video technology, can produce content that fuses virtual and real spaces.

• In addition, content in which AI characters interact with actors in the real world in extremely precise backgrounds is now within technological feasibility.

• This is truly a new technology that merges real and virtual space.
• The level of realism required depends on the field of application, but a digital virtual space can be a game or a metaverse in the entertainment domain, or high-definition digital twins in the domains of mobility and industrial applications of sensors.

• We believe this will serve as an important technology architecture in a variety of areas, from entertainment to social systems and sustainability.

• As you can see, the combination of sensors, AI and virtual spaces are at the core of our technology portfolio, and we expect this core to represent a major strength for us in the future.
Foundation model

• In addition, we plan to start building a large-scale AI model called a “foundation model” in order to further advance the AI which serves as a core of this architecture.
• Recent research has demonstrated that such foundation models, which are built upon extremely massive quantities of data, are very powerful.
• Some are even saying that in the future, the competitiveness of a company will be determined by whether that company has its own foundation model or not.
• How to put foundation models to real use is a question that is still being answered through trial and error, and I assume that this is still in the realm of demonstration, but I believe that it will be put to practical use at an early stage. We believe that foundation models, and the power of the AI that will be created through their future iterations, will contribute significantly to expanding people’s creativity and to the creation of a more sustainable society.
• To create such foundation models, however, we will need massive amounts of data that meets copyright and AI ethical requirements, and we will need to build a universe of technologies around those foundation models.
• We plan to further prioritize our end-to-end technological development efforts covering not only sensing, AI, virtual spaces and the foundation models at their center, but also the high added-value services that will maximize the potential of these technologies.
• This will be critical to making Sony an AI/Data-driven company.
We plan to make organizational changes after April 1st next year to better equip ourselves to focus on technologies that support our business.

The first part of this involves linking business and R&D more closely, aiming to improve consistency between mid- to long-term business strategies and R&D, and to enable rapid commercialization. This includes relocating R&D teams from the R&D Center at Sony Group Corp. to our operating companies.

In our R&D Center, teams conducting research into domains that individual operating companies are looking to strategically strengthen have joined forces at our R&D section of operating companies in order to accelerate their R&D efforts.

Teams that transferred to Sony Semiconductor Solutions Corporation will work to strengthen and diversify our image sensor technology.

Teams that will be joining Sony Corporation, which is home to the Entertainment, Technology, and Services segment, plan to develop video, sound and interaction technologies, especially in high-precision digital virtual space in an integrated manner, contributing to the realization of the metaverse and digital twins.
Technology Infrastructure Center
The Powerhouse of Sony’s Fly Wheel

• Second, we plan to establish an organization which will pursue R&D into fundamental technologies for the entire Sony Group and rapidly deploy them in the business units.

• This organization will pursue development of fundamental technologies including wide-range of AI technology related R&D, as well as R&D into data science and security technologies, and rapidly deploy these technologies in business units.

• By working closely with reinforced R&D in each business unit, the organization aims to be an engine of growth for the Sony Group.

• Today, technology is not just the domain of corporations; it is the infrastructure of society. In this sense, through our contributions to the open-source community, we are building a technology infrastructure not only for the Sony Group, but also for the whole of society.
Sony Research
A Place for Grand Challenges

• Third, we plan to establish Sony Research to take on extremely challenging projects called “grand challenges” and create innovative technologies from them.

• Founded in 2020, Sony AI has served as the hub of our R&D efforts, which we have pursued in the US, Europe, and Japan with the help of a diverse range of top talent assembled from around the world. We intend to establish the new organization to undertake unprecedented disruptive research, based on Sony AI.

• Sony AI has taken on “grand challenges,” which are extremely challenging projects. The GT Sophy project we’ve introduced earlier is one example.
• Sony Research is intended to drive our development of foundation models and take on greater challenges integrating a wider range of technologies.
Technology Promotion and Deployment Division
研究営業部門
A Special Team for Exploratory Deployment

• Fourth, we plan to create a new division dedicated to Technology Promotion and Deployment.

• The division’s goal will be to take R&D findings and a variety of other ideas with limited applicability to our existing businesses and work to see them quickly implemented in society and businesses.

• We think that the creation of the new division will reveal multiple potential deployment paths, including collaborations within the broader Sony Group or with external companies or organizations, the creation of start-ups, contributions to public spaces, academic contributions, and contributions to the open-source community.
• Sony Computer Science Laboratory will continue to conduct “Research for the Future of Humanity and Our Planet” in our laboratories in Tokyo, Paris, Kyoto, and Rome which we have newly established.
• The new organizational structure enhancement brings greater clarity to the role of each organizational constituent.
• In order to maximize the potential of this diverse organization, we will view the various R&D organizations within the Sony Group as a single ecosystem, and by dynamically linking them together, we expect to contribute to the value creation of the Sony Group from the perspective of technology.
• This is the basic concept of Sony’s R&D ecosystem.
• In terms of organizational connections, the Sony Technology Exchange Fair (STEF) itself provides a forum for the exchange of technology, and we are working to strengthen many other initiatives, to deliver broad support to efforts across the Sony Group. In addition to taking these initiatives to the next level, we also plan to introduce mechanisms that cross organizational boundaries to enable development achievements and ideas from every Group R&D organization to be cultivated in the best way possible.
• The key to the evolution and success of the ecosystem is diversity. In order to create technology that will inspire emotion among diverse users, it will become even more important for us to incorporate diversity and to be able to incorporate a wide spectrum of perspectives.
• The ecosystem is not confined just to the Sony Group. We will strengthen ties with creators to build future together and ties with academia. We are already engaged in a variety of activities including joint research projects with universities around the world, and are working to broaden this approach even further.
• We believe the R&D activities of the Sony Group, through its broad business portfolio and collaboration with diverse stakeholders, are in a position to make a significant contribution to improving the state of our civilization and the future of our planet.

• In addition, we want to take an active leadership role in leading this transformation.

• As CTO, I want to create an environment that draws out the best from every member of the Sony R&D team, while at the same time driving innovation in the organizational structure itself. I want R&D to be the “engine of innovation” that constantly innovates the Sony Group.
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• I will work hard to help achieve our mission to “Push Our Civilization Forward and Make This Planet Sustainable”.
• We naturally cannot achieve our mission alone. I believe we will make it happen by working alongside many others. I hope we can make a difference in our joint endeavor to build a better future.
• I invite you to watch with interest and anticipation to see what Sony Group’s R&D will do next.
Cautionary Statement

Statements made in this presentation with respect to Sony’s current plans, estimates, strategies and beliefs and other statements that are not historical facts are forward-looking statements about the future performance of Sony. Forward-looking statements include, but are not limited to, those statements using words such as "believe," "expect," "plan," "anticipate," "aim," "intend," "seek," "may," "should" or similar words of similar meaning, in connection with a discussion of future operations, financial performance, events or conditions. From time to time, oral or written forward-looking statements may also be included in other materials released to the public. These statements are based on management’s assumptions, judgments and beliefs, and on information currently available to it. Sony cautions that a number of important risks and uncertainties could cause actual results to differ materially from those discussed in the forward-looking statements, and therefore investors should not place undue reliance on them. Investors also should not rely on any obligation of Sony to update or revise any forward-looking statements, whether as a result of new information, future events or otherwise. Sony disclaims any such obligation.

Risks and uncertainties that might affect Sony include, but are not limited to:

(i) Sony’s ability to maintain product quality and customer satisfaction with its products and services;
(ii) Sony’s ability to continue to design, develop and offer new products and services, as well as achieve sufficient cost reductions for its products and services, including image sensors, game and network platforms, mobile devices, televisions, which are offered in highly competitive markets characterized by severe price competition and continual new product introductions, rapid product development in technology and subjective and changing customer preferences;
(iii) Sony’s ability to implement successful hardware, software, and content integration strategies, and to develop and implement successful sales and distribution strategies in light of new technologies and distribution platforms;
(iv) the effectiveness of Sony’s strategies and their execution, including but not limited to the success of Sony’s acquisitions, joint ventures, investments, capital expenditures, restructurings and other strategic initiatives;
(v) changes in laws, regulations and government policies in the markets in which Sony and its third-party suppliers, service providers and business partners operate, including those related to taxation, as well as growing consumer focus on corporate social responsibility;
(vi) Sony’s continued ability to identify the products, services and market trends with significant growth potential, to devote sufficient resources to research and development, to prioritize investments and capital expenditures correctly and to recoup its investments and capital expenditures, including those required for technology development and product capacity;
(vii) Sony’s reliance on external business partners, including for the procurement of parts, components, software and network services for its products or services, the manufacturing, marketing and distribution of its products, and its other business operations;
(viii) the global economic and political environment in which Sony operates, and the economic and political conditions in Sony’s markets, particularly levels of consumer spending;
(ix) Sony’s ability to meet operational and liquidity needs as a result of significant volatility and disruption in the global financial markets or a ratings downgrade;
(x) Sony’s ability to forecast demands, manage timely procurement and control inventory;
(xi) foreign exchange rates, particularly between the yen and the U.S. dollar, the euro and other currencies in which Sony makes significant sales and incurs production costs, or in which Sony’s assets, liabilities and operating results are denominated;
(xii) Sony’s ability to recruit, retain and maintain productive relations with highly skilled personnel;
(xiii) Sony’s ability to prevent unauthorized access or theft of intellectual property rights, to obtain or renew licenses relating to intellectual property rights and to defend itself against claims that its products or services infringe the intellectual property rights owned by others;
(xiv) the impact of changes in interest rates and unfavorable conditions or developments (including market fluctuations or volatility) in the Japanese equity markets on the revenue and operating income of the financial services segment;
(xv) shifts in customer demand for financial services such as life insurance and Sony’s ability to conduct successful asset liability management in the financial services segment;
(xvi) risks related to catastrophic disasters, geopolitical conflicts, pandemic disease or similar events;
(xvii) the ability of Sony, its third-party service providers or business partners to anticipate and manage cybersecurity risks, including the risk of unauthorized access to Sony’s business information and the personally identifiable information of its employees and customers, potential business disruptions or financial losses; and
(xviii) the outcome of pending and/or future legal and/or regulatory proceedings.

Risks and uncertainties also include the impact of any future events with material adverse impact. The continued impact of COVID-19 and the developments relating to the situation in Ukraine and Russia could heighten many of the risks and uncertainties noted above. Important information regarding risks and uncertainties is also set forth in Sony’s most recent Form 20-F, which is on file with the U.S. Securities and Exchange Commission.