

INNOVATION & TECHNOLOGY

Maximizing the Capability to Innovate Driven by Social Needs

Evolving business models, endowing OMRON with the competitiveness required for achieving sustainable growth, and expanding new business generation efforts

CTO Message

Complete NEXT 2025 through Companywide Application of the Business Creation Process based on Established Technology Management to Enhance Corporate Value



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OMRON's Business Creation Process Capitalizing on Technology Management Expertise

OMRON positions the SINIC Theory, proposed by our founder Kazuma Tateishi to predict future developments, as a management compass. Through innovation driven by social needs, we have achieved growth by addressing societal challenges. Under our NEXT 2025 initiative, we will continue pursuing innovation to tackle the three key issues outlined in the long-term vision SF2030, launched in fiscal 2022: "Achievement of Carbon Neutrality," "Extension of Healthy Life Expectancy," and "Realization of a Digital Society." However, in order to put OMRON back on a sustainable growth trajectory in a rapidly deteriorating business environment, we must now integrate the expertise gained through the process of establishing "Technology Management" into business development under NEXT 2025.

[> SINIC Theory](#)

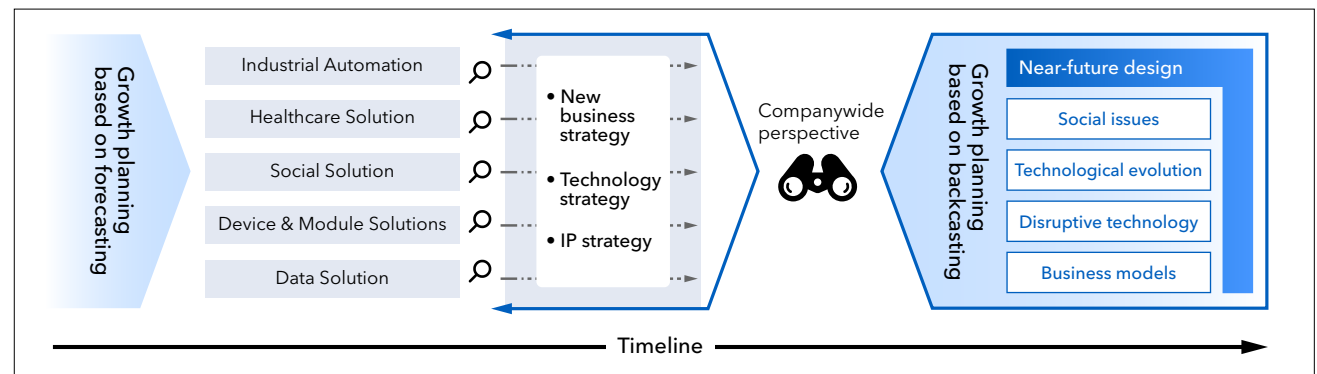
Since taking on the role of CTO, I have been focused on the challenge of establishing technology management. Technology management emphasizes growth planning from two perspectives, forecasting and backcasting, both grounded

in "near-future design," which is a concrete depiction of the near-future society. Business, technology, and intellectual property strategies are then formulated and implemented based on this framework (See [Figure 1](#)). Three organizations are dedicated to technology management.

The first organization is the Innovation Exploring Initiative HQ (IXI), which is a platform for OMRON's innovation. The second is the Technology and Intellectual Property HQ, responsible for evolving OMRON's core technologies, "Sensing & Control + Think," and for formulating and implementing strategies for intellectual property and intangible assets. The third is OMRON SINIC X Corporation (OSX), which promotes research through open innovation, guided by near-future design. During the recent years of rapid change, these three organizations have worked to establish a process for agile creation of new businesses and technologies by backcasting from near-future design. Through the initiatives of IXI and OSX, new businesses and technologies are beginning to sprout that could help resolve social issues.

For example, in its initiatives to evolve the business model from one based on "products" to one based on the

Figure 1 OMRON's Technology Management Based on Backcasting and Forecasting



“combination of products and services,” IXI has launched new businesses, including services that support the independence of the elderly and the digital transformation (DX) of manufacturing sites. The newly established Data Solution Business HQ (DSB), which is in charge of evolving OMRON’s business model, is promoting initiatives aimed at further growth.

While the Technology and Intellectual Property HQ focuses on developing core technologies to achieve business growth and reinforcement, OSX has steadily accumulated research outcomes utilizing cutting-edge AI and robotics. Currently, OSX is strengthening collaboration with customers and business divisions to implement these research outcomes in society. Intellectual property and intangible assets determine “competitive advantage” and “sustainability” driven by the business strategy, the business model, and the technology strategy.

In utilizing intellectual property and intangible assets, we have adopted ambidextrous IP activities by combining “Exclusive to Other Type” and “Sharing & Resonating Type” policies to implement both a closed strategy and an open strategy with partners (See [Figure 2](#)). This ambidextrous

approach is effectively employed in building a patent network for OMRON’s sensing technology and in implementing the Health & Productivity Management Alliance. In light of our challenges to date, I believe that technology management is essential for establishing a business creation process. This involves formulating concrete business, technology, and intellectual property strategies by backcasting from near-future design, involving partners who can share in the benefits of these strategies together with OMRON, and firmly linking these elements into a business model.

Management Issue to be Addressed under NEXT 2025: Reestablish a Growth Strategy from the Customer’s Perspective

While new businesses and technologies have begun to emerge based on established technology management, an issue that has come to light in the current downturn is the decline in development productivity of existing businesses. This stems from placing too much emphasis on a strategy that concentrated our resources on customers and businesses in specific industries, despite the rapidly changing market

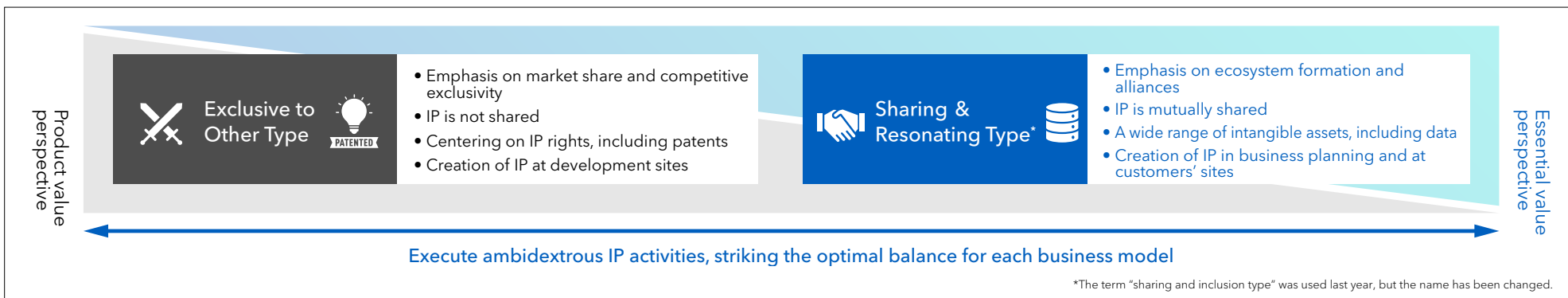
environment and evolving business models. Although the strategy yielded good business results for targeted industries and customers, we were unable to grasp the wide range of customer needs quickly and accurately. As a result, regrettably, we were unable to introduce products meeting market requirements.

In addition, because the development process was time-consuming and cumbersome, development themes took too long and we lagged behind competitors. In essence, OMRON’s essential issue was that we placed too much emphasis on product-out product planning and development to meet the immediate needs of specific customers, rather than forecasting from the customer’s perspective and formulating growth and product strategies accordingly.

Strengthen Collaboration with Business Divisions and Leverage Technology Management Capabilities to Support Completion of NEXT 2025

Under NEXT 2025, head office divisions are deeply involved from the outset, participating in discussions as each business division formulates its growth strategy based on forecasting. Growth strategies, product planning, development themes,

Figure 2 Ambidextrous IP Activities



etc. are being reviewed from the ground up. By incorporating the technology management expertise that we have been cultivating from a backcasting perspective, we will strive for innovation driven by social needs from the customer's perspective. Let me mention some specific initiatives. Previously, each business division formulated a growth strategy based on forecasting and collaborated with the Technology and Intellectual Property HQ to strengthen core technologies, intellectual property, and intangible assets. However, under NEXT 2025, instead of leaving growth strategy planning solely to individual business divisions, collaboration with the head office divisions, which have established technology management, is being further strengthened. So, the entire company is working as one to build a pipeline that tightly links business and technology. For example, in the rebuilding of the Industrial Automation Business under NEXT 2025, the Senior General Manager of the Technology and Intellectual Property HQ and I are actively involved in the Product and Technology Strategy task force, driving the restructuring of the strategy based on the processes and expertise we have cultivated in the course of technology management based on backcasting. Co-creation with partners is also an effective option to increase the pace of business. Previously, co-creation with partners was led by individual business divisions for themes relevant to their areas. Going forward, in order to gain further results, we will also actively invest the head office budget and resources to accelerate these efforts. In terms of technology strategy, the Technology and Intellectual Property HQ, as the responsible unit, has appointed technology officers and formulation of a technology strategy for each business division has started. To avoid falling into product-driven technological development in each business-planning, sales & marketing, and engineering work together to connect the supply chain and the engineering chain, ensuring that a technology strategy firmly linked to the business strategy is formulated. The technology strategies

of individual business divisions are then compiled and integrated into a companywide technology strategy. In the development of multiple businesses driven by social needs, which is a characteristic of OMRON, we aim to identify high-impact technologies that contribute to differentiation across businesses and concentrate management resources on R&D expected to have a high return on investment. We have also initiated reform of the companywide development structure that consists of three tiers—research, technology development, and product development—and are aligning the execution process with the characteristics of our business model, providing value to customers.

Development of Human Capital for Technology Management for the New Era is Critical to Realizing SF2030

We are committed to completing NEXT 2025 by restructuring the forecasting-based growth strategy, as outlined above, and accelerating innovation driven by social needs from the customer's perspective through both forecasting and backcasting. In technology management, we have focused on development of "architects" capable of formulating business, technology, and intellectual property strategies. In addition, we will develop "visionary human capital" who can chart the course of our growth strategy. This is because, to ensure OMRON's sustainable growth, it is essential to have human capital who can design the near future based on the SINIC Theory, sensitively grasp changes in society, and create a vision for the entire business creation process by connecting diverse information and people. These individuals must be able to understand and interpret the essence of customer value and technology, bridging the gaps between society (customers), business, and technology. In terms of technology strategy, increasing the speed from research to social implementation requires the capability to identify the essence of customer issues, recognize the value of research outcomes, and formulate hypotheses that

challenge conventional wisdom. This is not something that can be achieved by simply relying on generative AI. To cultivate human capital with these capabilities, the educational programs that have traditionally been planned by each business division for young employees are no longer sufficient. Instead, we need a companywide, systematic approach to human capital development with a clear purpose. This includes rotating young employees through various departments and giving them the opportunity to take on high-responsibility tasks, enabling them to gain experience and build expertise through iterative "trial and learning." With this in mind, we have begun management-level discussions on a program to develop the human capital who will lead OMRON's technology management in the new era.

According to the SINIC Theory advocated by our founder, society will enter a transitional period by 2025, moving from the Optimization Society to the Autonomous Society. OMRON today is also at a turning point in its journey toward realization of SF2030. As CTO, I am committed to forging ahead with OMRON's structural reform to complete NEXT 2025 by further advancing the technology management that we have been working on and ensuring that each employee contributes to innovation driven by social needs from the customer's perspective. Together with our stakeholders, we will continue to create new businesses and technologies that will shape the Autonomous Society.

Innovation Exploring Initiative HQ (IXI)

Achievements in Fiscal 2023

The Innovation Exploring Initiative HQ (IXI) achieved a strong start in fiscal 2023. Of particular significance was the establishment of the Data Solution Business HQ (DSB), OMRON's fifth business company, originating from IXI. DSB has two missions. One is to accelerate the growth of JMDC Inc., which has joined the OMRON Group. The other is to integrate JMDC Inc.'s data management and solution development capabilities with the vast amount of on-site data obtained from OMRON's devices and components, in order to evolve OMRON's business model and create growth businesses that will help resolve social issues. Collaboration between JMDC Inc. and OMRON, which have different business models and corporate cultures, is rooted in a relationship of trust in which each views the other as the best partner. IXI played a central role in acting promptly and decisively to capitalize on OMRON's unique capabilities, including establishment of the Health & Productivity Management Alliance.

Another milestone is the launch of services—the data utilization solution business and the elderly care solution business—by two in-house startups that IXI incubated and whose business hypotheses it validated. In fiscal 2024, the two businesses were transferred to DSB following its establishment. The data utilization solutions and the Healy Ageing Solutions are experiencing accelerating sales growth, aiming for profitability in fiscal 2025 and fiscal 2026, respectively.

Evolution of Business Creation Approach

The establishment of DSB has clarified OMRON's strategy to create new businesses and transform business models. All of DSB's focus businesses are based on themes that IXI earmarked for promotion, such as data healthcare and support for achieving carbon neutrality in manufacturing industry. Viewing DSB's focus businesses as "stepping stones," IXI will concentrate on expanding their peripheral businesses by implementing timely measures to accelerate their growth.

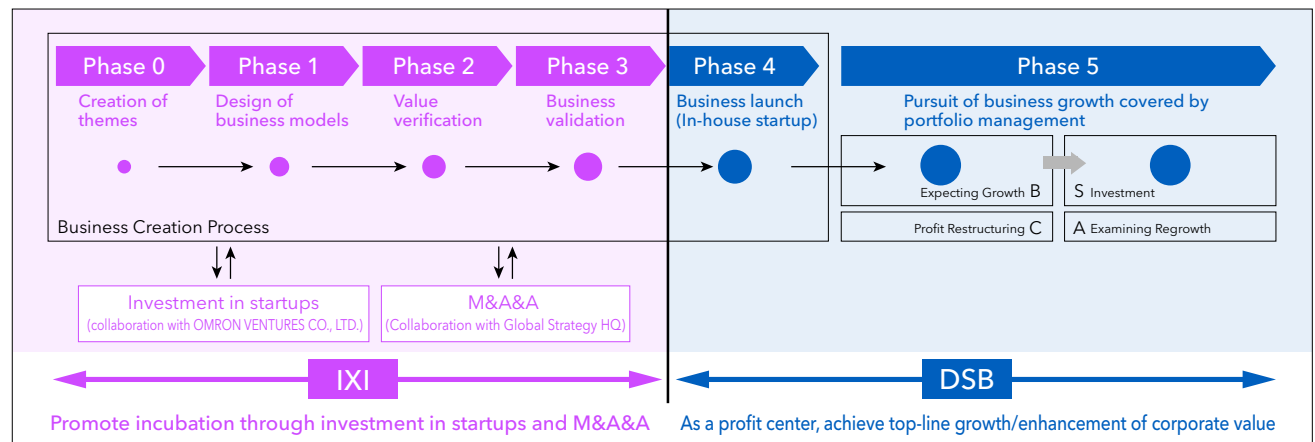
In creating peripheral businesses, we will shift our approach from germinating business seeds based on ideas to achieving progress through open innovation, such as by means of M&A&A (the last A being alliance) and co-creation with startups. We draw up new business concepts from a

medium- to long-term perspective and link them with the business expansion strategies of DSB and other business companies to contribute to OMRON's growth.

Promotion of DX throughout the OMRON Group

Since fiscal 2023, OMRON has been tackling companywide business innovation using generative AI, positioning IXI as a Center of Excellence (CoE). In promoting NEXT 2025, companywide business process reform through DX is indispensable, but a strong engine is needed to drive initiatives across the board. By taking maximum advantage of IXI's expertise in value verification of new businesses and business transformation for NEXT 2025, we intend to lead transformation of the entire OMRON Group.

New Approach for Business Creation



Implanting a Culture of Innovation throughout OMRON

One of IXI's missions is to "develop human resources," that is, to foster a large number of people who can drive innovation across OMRON. DSB's establishment and DX promotion throughout the OMRON Group, which were achievements of fiscal 2023, were the fruits of our efforts to strengthen the human resource portfolio and human resources development.

IXI has introduced the Employee Experience (EX) Journey, a systematized approach to human resources development. The goal is to have IXI members rapidly unleash their full potential after joining IXI so that they can achieve impactful results. Additionally, the initiative aims to ensure that employees seconded to IXI return to their respective organizations as ambassadors of the culture of innovation. The "employee experience" encompasses every stage, from pre-transfer (or pre-joining), onboarding, and the first day to career development, and even the post-IXI journey. As a result of the introduction of EX Journey, employees with diverse backgrounds drawn from inside and outside the company are able to take on the challenge of creating new businesses and promoting DX for OMRON as a whole while leveraging their respective strengths. An increasing number of employees who have gained experience at IXI are bringing the culture of innovation back to their respective organizations after leaving IXI, driving cultural transformation throughout OMRON. This includes fostering a heightened sense of urgency by stressing speed and promoting value enhancement, with ideas for improvement shared freely, regardless of positions in the corporate hierarchy.

Toward Further Advancement

IXI underwent a major evolution in fiscal 2023, but its goals remain the same. As an innovation platform for the entire OMRON Group and as an experimental organization that transforms challenges into opportunities for learning, IXI strives to create new businesses, transcending the boundaries of business companies, and contribute to the maximization of OMRON's corporate value.

Column 1: Establishment of the Health & Productivity Management Alliance

The Health & Productivity Management Alliance is a collaborative framework for companies that share a vision of "revitalizing Japanese companies and securing the sustainability of company-run health insurance societies by promoting employees' well-being." At the initiative of IXI, plans were firmed up and OMRON and eight other leading managing companies created a framework for collaboration with ministries, agencies, and academic institutions, transcending the boundaries of industries, business sectors, and companies. In just over a year since its establishment, the Health & Productivity Management Alliance has expanded to include 424 companies and organizations*, and has emerged as a platform where members share pioneering initiatives. From fiscal 2024, subcommittee activities will be emphasized to achieve results through collaboration among companies in a more practical manner for further evolution.

*As of August 29, 2024



 Health & Productivity Management Alliance

Column 2: Promoting Generative AI Utilization Promotion Project

The "Generative AI Utilization Promotion Project (AIZAQ)" was launched to apply IXI's expertise in value verification for new businesses and business transformation across OMRON. More than 200 people from across OMRON, all with a strong desire to raise productivity and innovate the customer value proposition through the use of generative AI, have joined forces in this project led by IXI. Participants include not only those with generative AI expertise who can provide technical support, but also employees without experience of AI who are eager to improve the efficiency of their daily work and drive meaningful change. A broad spectrum of individuals—ranging from managers to young employees, regardless of position, age, or department—are actively engaged in AIZAQ and are practicing trial & learning. At first, themes were solicited from across the company wherever generative AI could be applied. Personnel were assigned to each theme, goals were set and verification of AI's utilization began. During the first six months of the initiative, issues in utilizing generative AI were identified and concrete results were achieved for some 20 use cases. For example, one use case involved tabulating and analyzing customer questionnaires about products. The desirability of replacing existing tasks with generative AI was verified, and positive results prompted horizontal deployment to other divisions. From fiscal 2024, the goal is to annually develop 50 use cases so as to continually accumulate and share knowledge throughout the company, while achieving further progress through horizontal deployment.

Technology and Intellectual Property HQ

Core Technologies as One of the Key Sources for Innovation Driven by Social Needs

The Technology and Intellectual Property HQ, OMRON's corporate R&D unit, is responsible for strengthening the competitiveness and growth of each business. By anticipating social issues that may arise in the near future and evolving core technologies to resolve them, we are endeavoring to achieve innovation driven by social needs. For this purpose, the Technology and Intellectual Property HQ oversees governance across OMRON of intellectual property and intangible assets, which are important corporate management resources, formulating and implementing intellectual property strategies for R&D and each business. Thus, our role encompasses OMRON's technology management with respect to both "technologies" and "intellectual property." Our core technologies "Sensing & Control + Think" are the source of OMRON's creation of customer value through innovation driven by social needs. In order to address the three social issues set under SF2030—"achievement of carbon neutrality," "realization of a digital society," and "extension of healthy life expectancy"—the Technology and Intellectual Property HQ has been focusing on the core technology domains of robotics, sensing, power electronics, and AI and data analysis, while promoting technological development for social implementation based on "near-future design." Specific initiatives are described below.

■ Robotics

OMRON began verification tests with Chugai Pharmaceutical Co., Ltd. to realize a next-generation laboratory automation system that automates a series of

experiments in drug discovery research. (July 2023) Technologies, such as robotics to assist/automate drug discovery experiments conducted by humans and autonomous driving to enable robots to move freely in the confined spaces of laboratories, are being verified.

■ Sensing

A simple means of measuring blood pressure anywhere, anytime to estimate the degree of hypertension—a key factor in cardiovascular and cerebrovascular diseases—would meet a pressing need. To address that need, we are integrating sensor device design technology and AI technology to develop innovative blood pressure measurement technology enabling easy measurement with improved accuracy. We are presenting our findings at academic conferences and other events.

■ Power Electronics

We have developed new power supply technologies, including design optimization technology based on computer aided engineering (CAE) and resonant circuit design technology. These innovations enable both downsizing and efficiency improvements of the power supply, which is at the core component of the control panels that efficiently operate production equipment in factories.

■ AI and Data Analysis

We have developed causal analysis technology that reduces facility start-up time by 75% compared with conventional methods. This was accomplished by adjusting the start-up process in collaboration with local team members, based on the analysis of data obtained from production facilities and quantitative evaluation of causal structures related to quality characteristics.

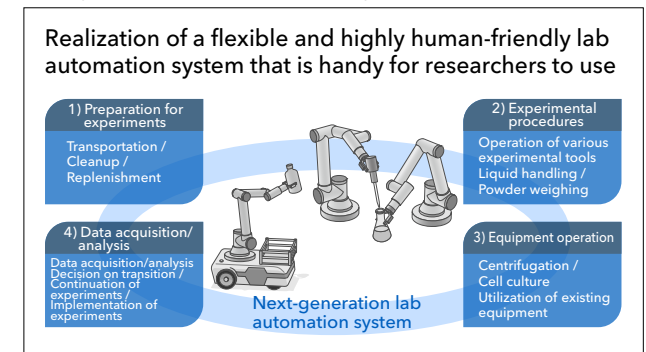
In addition to the development of these technologies, the Technology and Intellectual Property HQ took the lead in drafting the OMRON AI Policy to promote the ethical use of AI technology. (June 2024)



In this way, we have evolved our core technologies while staying closely connected with both internal and external customers. However, society continues to undergo profound change. The replacement of human tasks with, and collaboration between, generative AI and robots are advancing at an increasing pace. As a result, challenges at workplaces across a wide range of industries—not just manufacturing but also healthcare and food—are becoming more complex and customer needs are shifting dramatically. In such an environment, it is critical to develop technologies that will be a source of timely value for our customers. This requires a companywide technology strategy closely aligned with our business strategy, raising development productivity, and maintaining competitiveness. We need a technology development process that continually assesses the evolving direction of customer needs amid rapid societal changes, identifies the necessary technologies, and creates value in advance.

In fiscal 2024, we will focus on strengthening technology governance to further advance robust technology management.

Next-generation Lab Automation System



Technology Governance Enhances Development Productivity and Competitiveness and Supports Technology Management

Technology is at the source of the challenge we have undertaken, namely, to create innovation driven by social needs and continuously resolve social issues. Strengthening the competitiveness of individual businesses is insufficient. The Technology and Intellectual Property HQ must spearhead OMRON's ongoing efforts to create technologies and achieve intellectual property outcomes. To achieve this, it is crucial to create technologies that are needed by both business and society, while firmly linking R&D, technology development, and product development from the customer's perspective. As a companywide organization, the Technology and Intellectual Property HQ is uniquely positioned to facilitate collaboration across businesses, maximizing the impact of development outcomes. Working together with technological talent from across the company, the Technology and Intellectual Property HQ is the central unit driving technology management with the goal of maximizing OMRON's corporate value. To further enhance R&D productivity and sharpen competitiveness, we are implementing two initiatives to strengthen technology governance.

■ Formulating a technology strategy for each business domain

Closely aligning the business strategy with the technology strategy, we will formulate a technology strategy for each business domain and prioritize technologies from a companywide perspective. This approach will enable us to execute high-quality development themes based on these strategies, leading to more efficient contributions to business and higher development productivity.

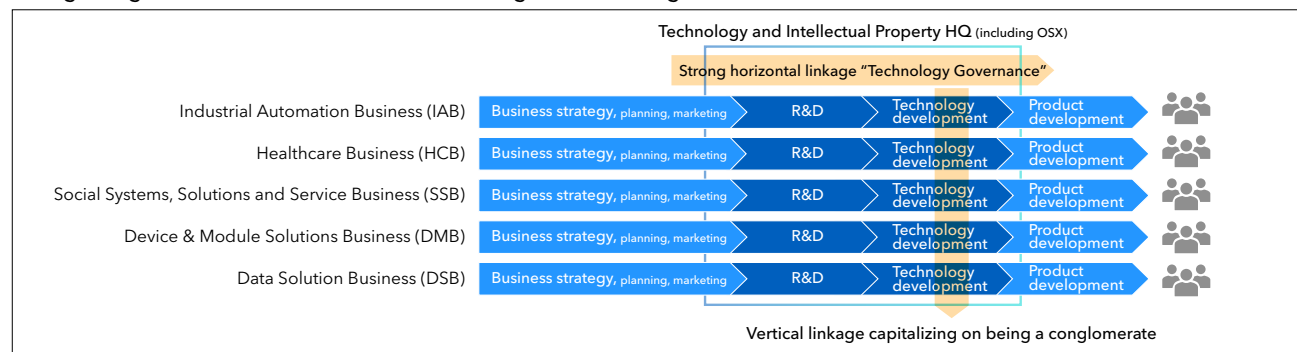
■ Development of indicators to enhance effectiveness of technology strategies and their companywide implementation

To monitor the effectiveness and progress of on-site development productivity and technology strategies, we will

develop indicators to help determine whether our technological capabilities are necessary and sufficient for success in terms of "competitiveness." These indicators will be integrated into our companywide business operations system to inform management discussion and decision-making. Through these initiatives, we are endeavoring to evolve robust technology management. For instance, collaboration with the Social Systems, Solutions and Service Business (SSB) has led to the creation of technology that delivers customer value through a pipeline reflecting strong linkage between business strategies, product strategies, and technology development. An example of this is the pursuit of carbon neutrality, which requires the reduction of CO₂ emissions from homes through the use of solar power generation, storage batteries, electric vehicles, plug-in hybrid vehicles, etc. A vehicle-to-everything (V2X) system, which enables bidirectional power supply between the home and vehicle, can greatly contribute to energy management tailored to household lifestyles. V2X is also attracting attention as a means of strengthening resilience against natural disasters, which have occurred frequently in recent years. With a business strategy focused on addressing these social issues, SSB has been promoting product development to realize a highly flexible system that can be installed in limited spaces and other locations where

installation was previously difficult. Meanwhile, the Technology and Intellectual Property HQ has been conducting advanced research and technology development in the energy solution business domain, and proposed to SSB the use of gallium nitride (GaN) devices to realize this V2X system. Although GaN devices had not yet become commonplace in power conditioners, we forecast that they would eventually become the de facto industry standard. GaN devices, which are next-generation semiconductor power devices formed on gallium nitride crystals, offer several advantages over conventional silicon-based power devices. They can handle higher power with less loss and allow much more compact circuit design. However, GaN devices are difficult to use because they tend to generate noise. By developing drive and filter circuits to suppress the noise, we realized one of the smallest and lightest power conditioners in the industry at that time. We continue to develop leading-edge technologies to address future business challenges. Furthermore, the GaN device technology we adopted in view of technological evolution can be horizontally deployed across other business domains, such as factory automation, to meet customer needs. We believe that by linking this technology with each business strategy and incorporating it into our products, we will be able to exceed customer expectations. The ability to

Strong linkage with business units and vertical linkage within the organization



undertake such initiatives is a key advantage of the Technology and Intellectual Property HQ, a corporate R&D unit conducting technology development. We believe this is one of OMRON's core strengths as a conglomerate able to leverage manifold capabilities.

Unceasing Creation of Innovative Technologies for Social Implementation

In a rapidly changing society, to create technologies that exceed customer expectations, we must continuously anticipate future technological needs from a medium- to long-term perspective and accumulate the necessary technological capabilities. OMRON SINIC X (OSX) is in charge of this task. OSX is taking on the challenge of creating innovative technology by employing a "near-future design" approach from a broad perspective unconstrained by the frameworks of existing business or technological development, viewing society and technology from the "science" perspective of the SINIC Theory. AI came its own in society in 2023. Typified by generative AI, social implementation of AI technologies, which had been in the R&D phase, began and they spread worldwide. In light of this technological progress, OSX is conducting research on cutting-edge themes, including robot learning technology, which utilizes machine learning and reinforcement learning, and AI technology to increase the efficiency of materials research within materials science. With a cumulative total of more than 60 research papers accepted at top-tier international conferences, OSX has gained recognition both in Japan and internationally as a unique corporate research institute and continues to steadily accumulate research outcomes. In fiscal 2023, to facilitate the social implementation of this research outcomes, OSX focused on promoting collaboration, establishing a co-creation processes from the customer's perspective and seeking co-creation partners, while actively engaging in technology communication activities. For example, through an internal open recruitment system

for concurrent positions, OSX recruited "near-future design evangelists" who will communicate OSX's vision of "near-future design" to the public. These are individuals who aspire to create pioneering products and services that set OMRON apart from the competition through collaboration with cutting-edge researchers. They are also inspired by the challenge of contributing to business by "communicating" and "delivering" both within the company and externally. In fiscal 2023, to enhance the competitiveness of each business, together with the "evangelists" we sought to create opportunities for proposing technological outcomes of OSX and the Technology and Intellectual Property HQ in collaboration with the product development teams of each business unit HQ. While interacting with various departments—including sales, planning, and product development—we focused on finding intersections where our technologies could help resolve customer issues. We also strengthened the dissemination of our results through the web and social media. Moving beyond simply announcing the acceptance of papers, we now explain our technological outcomes in a way that is easy for non-specialists to understand, aiming to generate interest so as to facilitate co-creation with external parties. As a result of these activities, customers consult with our sales department on the issues they are facing, and these interactions have evolved into co-creation of solutions.

In-house technical exchange



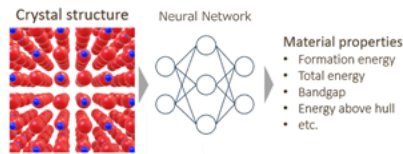
Case Study: Co-creation Process for Social Implementation of Research Outcomes

In business development based on cutting-edge technologies, there is often a "valley of death" where R&D outcomes are not commercialized, thwarting their advancement to the social implementation phase. To overcome this challenge, it is crucial to generate ideas by identifying issues from the customer's viewpoint in a timely manner. We use an in-house recruitment system to attract motivated individuals from throughout OMRON who are eager to link R&D outcomes to business and achieve social implementation. However, if they are "transferred" to another organization, they may lose touch with the voice of the customer, making it difficult to identify the issues. Therefore, recognizing the need to engage in the commercialization process while continuing their regular duties, we actively utilize the internal open recruitment system for concurrent positions. By fostering a co-creation process from the customer's perspective, we aim to spur business creation.



Research Showcase: Crystalformer

While the application of generative AI is rapidly progressing in the digital realm, particularly for text creation and image generation, research is also underway for its use in the real world. For example, generative AI is beginning to be used to increase the efficiency of materials development, such as for finding new materials for all-solid-state batteries with better energy efficiency. OSX is developing AI technology to improve productivity in inorganic materials development. Recently, we developed "Crystalformer", a Transformer-based neural network to predict the physical properties of materials from their crystal structures with high accuracy. The transformer is a neural network architecture that was originally conceived for text translation and is now the foundation for large language models used in recent AI chat technologies. The transformer uses its main module, called the self-attention mechanism, to capture the meaning of words in context while estimating relationships between them. In our work, we point out the similarity between Transformer's self-attention mechanism and the interatomic potential summations used in the energy calculation algorithms for crystal structure simulations. By taking advantage of this similarity, Crystalformer performs physically inspired calculations for interatomic interactions, which enable the accurate estimation of states of atoms in crystal structures. We believe this technology will significantly enhance development productivity and contribute to new discoveries and applications in materials science and nanotechnology. This research is conducted as part of the "Materials Exploration Platform; Expanding Search Space by high-throughput technology" (Project Leader: Mr. Keisuke Nagato, The University of Tokyo) which is a full-scale R&D project in the "Common Platform Technology, Facilities, and Equipment" mission area of the Japan Science and Technology Agency's JST-Mirai Program. The research is being promoted through open innovation in collaboration with various research institutes and researchers.

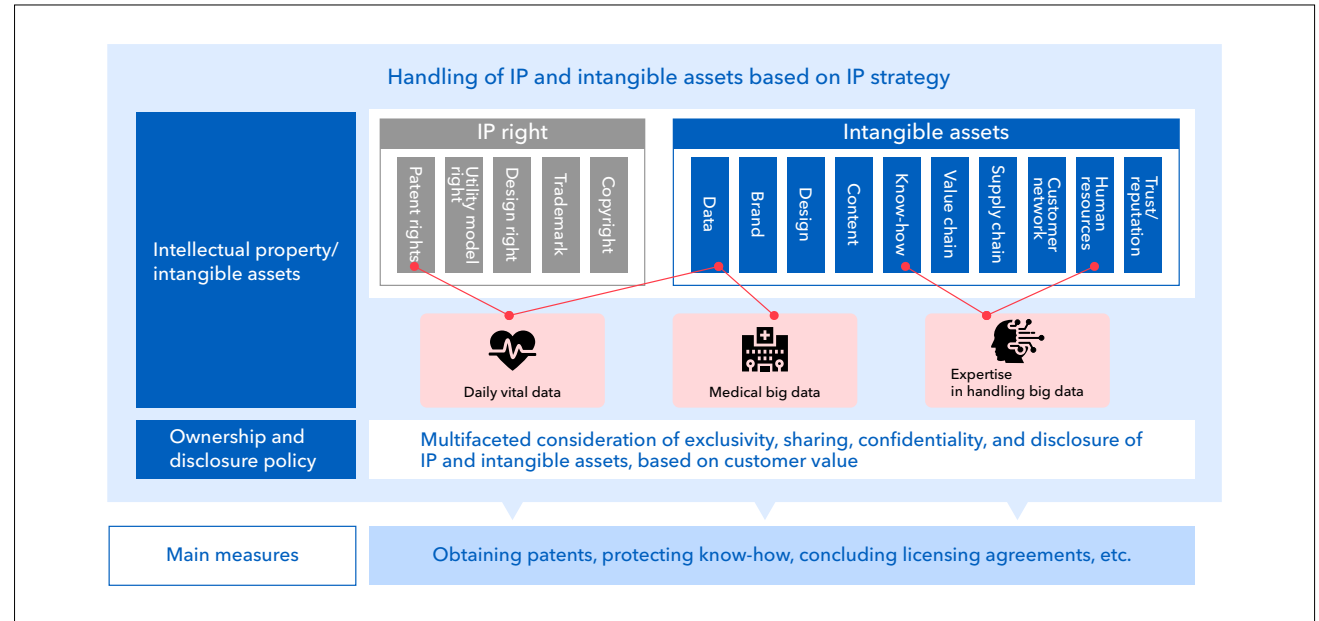


Evolution of customer-centric IP and intangible asset activities

In fiscal 2018, the Intellectual Property Center defined its mission and vision for the creation and delivery of new value through intellectual property, setting OMRON on a trajectory of sustainable growth. Since then, it has been evolving its intellectual property/intangible assets initiatives. In recognition of these IP and intangible asset activities, OMRON has been selected as one of the "Top 100 Global Innovators" by Clarivate, which selects the world's most innovative companies and research institutions, for eight consecutive years. OMRON's IP activity policy is to pursue "Ambidextrous IP Activities" by combining "Exclusive to Other Type" and

"Sharing & Resonating Type" in an optimal balance. In Exclusive to Other Type, IP is used only by the company in principle for the purpose of increasing sales and market shares of the company's products, whereas in Sharing & Resonating Type, necessary IP is mutually shared while emphasizing alliances with partners. In particular, in Sharing & Resonating Type IP activities, we cover not only individual IP rights, which have been the focus of our activities so far but also intangible assets. We are working to manage IP and intangible assets with a view to maximizing customer value. As the first step, for businesses that utilize data, such as the Health & Productivity Management Alliance, members of the Intellectual Property Center participate in projects from the phase of business conception onward and establish IP strategies closely linked

IP Strategy Development Process



with business strategies, including the handling of IP and intangible assets that are essential to the business. Going forward, the IP strategy establishment process cultivated through involvement in data utilization businesses will be horizontally deployed to other businesses of the OMRON Group. Improvement of the efficiency of companywide utilization of IP and intangible assets will become increasingly important for obtaining the maximum advantage from investment in terms of business competitiveness. All employees need to recognize the IP and intangible assets that exist within the OMRON Group and be able to utilize them. The Intellectual Property Center is categorizing the in-house technologies accumulated for each business based on the functions necessary to realize customer value, while also working on systematic visualization, linking the technologies with human resources by utilizing information such as inventor information related to patents. Through these activities, we aim to improve the efficiency of utilization of IP and intangible assets. In order to further promote these IP and intangible asset activities, we are considering KPIs for IP activities linked to business success from the perspective of “advanced technology development efficiency,” that is, how efficiently R&D investments are converted into competitive technologies; the perspective of “social implementation rate,” that is, to what extent the IP and intangible assets created are linked to OMRON’s business growth and business advantages; and the perspective of “human resources capability,” that is, to what extent human resources capabilities are improved as a result of development activities.

Customer-centric IP and intangible asset activities

We apply “IP landscaping,” which uses IP information to analyze customer and business environments, in marketing and other business decision-making processes. For example, in the phases of formulation of business hypotheses and establishment of development themes, we are efficiently running a cycle of hypothesis testing to

promote “identifying customer needs,” “creating a story to win in business,” and “improving return on investment in business.” Such IP information analysis activities are conducted by a dedicated team directly under the Intellectual Property Center, and are implemented from upstream of the business process to enhance the quality of management, business, and technology strategies. Moreover, the Intellectual Property Center consolidates the technologies and knowledge of each business unit as IP/intangible assets and deploys them companywide. For this purpose, we are preparing to transition the structure of the Intellectual Property Center from a structure based on business to one based on IP function, thereby eliminating the barriers between businesses and enabling companywide management of IP/intangible assets. In the future, the Intellectual Property Center will centrally manage the technologies and knowledge held by each business of OMRON, aiming for their efficient companywide utilization. Furthermore, we are emphasizing the use of AI to accelerate customer-centric IP activities. For example, we aim to dramatically improve operational efficiency by proactively

utilizing generative AI to generate ideas that it was previously thought could only be conceived by humans. We also aim to further improve the quality of hypothesis testing in IP landscaping and achieve high-cycle management. To achieve these aims, we are implementing systematic and continuous education programs designed to refresh the mindsets and enhance the skillsets of all members of the Intellectual Property Center. Through these customer-centric IP and intangible asset activities, the Intellectual Property Center endeavors to improve the efficiency of investment in technological development from the perspective of IP/intangible assets and contribute to creation of the value propositions of businesses. We will continue to be the source of a stream of technologies that exceed customers’ expectations, illuminating a path to the future through innovation driven by social needs.

OMRON Intellectual Property Center Mission

We deliver unique value for people around the world by leveraging our core assets of intellectual property.

We develop and deepen appealing ideas.

We deliver peace of mind and confidence to customers.

We enhance our presence to our competitors offensively and defensively.

OMRON Intellectual Property Center Vision

We bring the IP specialists together from diverse fields and continue to create innovation.

We defy stereotypes.

We create a new paradigm of connections.

We strive to increase the trust from the management team.