



CTO Interview

Technology Management Centered around our Corporate Philosophy

Representative Director, Senior Managing
Executive Officer, CTO and Senior General
Manager, Technology & Intellectual Property HQ

Kiichiro Miyata

Architectural Thinking Required in Changing Times

— We have now been living with the COVID-19 pandemic for one and a half years. From the perspective of a CTO, what changes do you consider COVID-19 brought to society and business?

COVID-19 has resulted in huge, fundamental changes worldwide. People's lives are now different, new values have emerged, and business rules and practices have changed. Taking a broader view of these changes, however, shows that we are being swept along by major trends. This trend is digital transformation (DX), which is fundamentally changing the way in which society and industries function. All around the world, the internet connects people with people, people with things, and things with things—diverse knowledge and information are generated, distributed, shared, and they are available whenever needed, in the needed formats. What makes this all possible is the exponential evolution of computing power. The pandemic has resulted in dramatic increases in the pace of these changes, and given that operating as we have done before is no longer an option, we need a fundamental rethink of what is really necessary.

For us as well, the pandemic has presented an opportunity to review the core value of science and technology required when confronted by rapid social change, and to envisage a future that we should aspire to. With the imposition of a state of emergency in spring last year, OMRON employees in principle had to work from home. In their efforts to carry out R&D and create new businesses, the Technology & Intellectual Property HQ and the Innovation Exploring Initiative HQ (IXI) also had to rein in some of their collaborative creation activities, especially some with parties outside the company. However, thanks to this, we were able to spend three months discussing in depth the areas that OMRON really needs to work on, the value within those areas, and what should be stopped or changed, without relying on any assumptions that had hitherto been made. Through this, we reaffirmed the importance of our “architecture capacity.”

This architecture capacity is the ability to look three to five years hence, precisely define an image of society at that time, and determine what social issues will need to be resolved, and then design and put in place the three architectures—business, technology, and intellectual property—that are needed to solve the problems and create social needs. Our experience in this unprecedented crisis that is the pandemic has made me very aware that this architecture capacity is indispensable in order that we can respond flexibly to change.

— Have any businesses been spurred to make reforms by the pandemic?

Remote patient monitoring are a good example. In many parts of the world, people hesitate going to hospitals for fear of infection, and even in Japan, the ban on online initial diagnoses of patients has been lifted. However, even if we get past the COVID-19 pandemic, issues such as shortages of medical staff and a skewed distribution of medical services towards urban areas will not fundamentally be resolved, and are likely to worsen. It is here that we expect demand for remote consultation services to grow.

OMRON has invested in U.S. startup AliveCore, Inc. that provides home electrocardiographs, as well as Dutch company Luscii Healthtech B.V. that provides online medical services, and is moving forward with business alliances. Also, through our internal venture capital company OMRON VENTURES CO., LTD. we are investing in British company Patients Know Best Ltd. that is developing a medical data sharing system, and have started collaboration. We have considered the digitization of healthcare an area for strategic investment area for some time, but the COVID-19 pandemic has brought this to the fore.

Organizational Mechanism for Solving Social Issues

— One of the mechanisms that supports management based on the OMRON Principles is “Technology Management.” What is OMRON’s Unique Technology Management that the company has been aiming for in VG2020?

Based upon OMRON’s Corporate Motto, the idea of discern new, hitherto not perceived social needs, and solve social issues is at the core of what we consider Technology Management. Central to this is the future predictive SINIC theory that acts as a lodestone for OMRON’s management, and that was presented by company founder Kazuma Tateishi at the World Futures Studies Federation. This theory was born from his strong conviction that it was necessary to grasp social needs by predicting future society, and to conduct management and business based upon these. The SINIC theory is based upon the idea that science, technology, and society will mutually interact with each other thus leading to a virtuous cycle—from these, OMRON’s particular emphasis is upon society. OMRON has a unique approach of predicting how society will change and what issues will arise as a result, and using science and technology to resolve these issues. Our founder excelled at quickly perceiving

indications of change in the world, creating a very specific vision of the future that no-one else had noticed, and understanding social needs. However, when the company no longer had someone with this particular skill, we were confronted with the problem of who would be able to forecast future social needs, and come up with solutions for these. Accordingly, we have established OMRON SINIC X Corporation (OSX) in 2018 together with IXI, an OMRON Group-wide innovation platform, in order to work systematically on business creation and developing solutions based on SINIC theory. This is nothing less than putting into practice “ambidextrous management”—this simultaneously promotes the deepening of existing businesses together with the quest for and establishment of new businesses. [P4 SINIC Theory →](#)

— Please tell us about the roles of IXI and OSX, and their performance.

We are creating an image of the near future, and working on the architecture for the strategies needed to make this a reality in terms of technology, intellectual property, and business models. IXI is the organization that promotes this process of backcast-type innovation creation. OSX, however, is a strategic location that is tackling the creation of designs for the near future, based around technological innovation. This is an independent company that adopts a free research and development style not constrained by conventional OMRON systems and rules, and that hires from outside the company top human resources in the fields of cutting-edge technologies. We are working on open innovation with a diverse range of members. In the three years since IXI and OSX started, we have established the “template” for the OMRON-style innovation that we are pursuing. This is an Integrated Innovation Process that combines new business development with knowledge sharing. This process comprises four phases, namely “Phase 0: Business Ideation,” “Phase 1: Strategy Formulation,” “Phase 2: Business Verification & Technology Validation,” and “Phase 3: Business Development.” The most difficult of these is Phase 0. Determining the kinds of seeds to select for innovation, whether these respond to legitimate social needs, and whether these can be scaled up for a business exceeding its capital cost is no easy task. [P59 IXI →](#) [P63 OSX →](#)

— How did you overcome this problem?

This time, we focused on “planting the flag.” At OMRON, when employees declare that they have set high goals, we refer to this as “planting the flag,” and we have also expanded this flag planting culture for working with business partners. For example, even though ostensibly a robotics business, our making a specific, pointed declaration on this will clarify what types of

technology and management resources will be needed as well as who we should work with, and what is still lacking in order to expand. Another thing we have learned is to not trust too much to on-site judgment. The more we aim for creation of a business that can predict the future and that can at times even reform social systems themselves, the more complex laws and regulations as well as relationships with stakeholders become, posing an onerous responsibility and burden for the sites alone. Therefore, we ventured to introduce a centralized decision-making system. This does not, of course, mean that we only use top-down decisions. Without losing our sense of haste, top management stresses conducting discussions and making rapid decisions with personnel on-site.

As the speed of change accelerates, rather than continuing with cautious discussions into whether something is right or not, the most important thing is to make a decision. If that decision proves to be wrong, then we should learn from that failure, and start over. Documenting this process makes it useful knowledge that can be shared.

— Are these seeds ever in short supply?

No, they're not. This is because all OMRON employees are provided the opportunity to think of themes, and take it upon themselves to work towards making products or services commercially feasible. IXI is not simply a dedicated organization for creating new business, but rather a platform. This has as its purpose having people aware that new business development is not just something to be done by others, but instead the entire group's ability to create innovation is also something they need to embrace.

The Technology & Intellectual Property HQ has up until now also been considering many new themes. However, there are some areas that are still unclear in the process of selecting themes, so from this year we have streamlined how to select business ideas in Phase 0. Ideas that have been brought in are refined in weekly themed meetings, and discussions are held to determine the next step. Each presentation is limited to 10 minutes and five pages, with plenty of time spent on discussions. I am the organizer of these themed meetings, and as such have attended all of them.

The important thing here as well is to reach conclusions, or put simply, make decisions. I briefly cover and share with everyone involved what we need to do as the next step or whether this is to be halted, and the reasons for this. I feel strongly that these highly transparent discussions and prompt decision-making processes foster a mindset of innovation within the company.

— Please tell us about some projects in the works using IXI.

I'll introduce two challenges that aim to create new businesses, from the perspective of creating social needs. One of these is our agri-automation project in China, currently undergoing business verification. This is so-called smart agriculture that utilizes OMRON's strength of "Sensing & Control + Think" core technology. We are verifying an Agricultural Cultivation Support Service that automatically measures sunlight, temperature, humidity, carbon dioxide levels, and other variables, thereby determining optimal conditions for each crop and providing timing for when to open and close windows, irrigate, and similar. A feature of this service is that it is unique in not providing hardware in order for automation or to save manpower—rather it provides information that helps humans in making decisions. Its instructions let even those workers with little farming experience produce high-quality crops both efficiently and stably. At the same time as helping resolve social issues such as shortages of agricultural workers and food safety and security, this will also improve the ability of the algorithms to analyze and provide feedback for the data obtained from the system.

Another challenge currently in the business verification phase is a service using ICT to provide long-term care prevention services for the elderly under a partnership agreement with Oita Prefecture. We know that it is possible to prevent a high percentage of elderly people from progressing to needing nursing care if they can be adequately supported by nursing care specialists at the stage where they need assistance. However, there is a serious shortage of specialists who have the skills and expertise in this field. Accordingly, we have developed software that replicates the procedures and thought processes of nursing care specialists. We first asked the elderly themselves and their families about issues with daily life, and how they'd like these improved. We then analyzed these responses using this software, so we could formulate a plan for life function training. At present, the commonality between these two products, which we are now aiming to commercialize, is not only that they respond to social needs, but the concept of "harmony between humans and machines." Specifically, this is a hybrid system in which technology assists humans in maximizing their own abilities and their motivation.

P59 IXI →

Changing our Business Style and Seeking Self-driven Growth through Collaborative creation

— President Yamada is committed to achieving self-driven growth—increasing earnings and growing steadily even under adverse business conditions. As the CTO, how are you supporting him?

There are two main challenges we need to confront. The first is to change our existing business model, or put differently, our business style. Our existing business model will only serve us in the future if the market itself is growing, or if we can acquire more market share from our competitors. For OMRON, the increasingly aging population means that the healthcare market is expanding, and we hold the top market share, so at this point we have some control over the market. However, this may not be the case in the future. We therefore need to change our business style. OMRON's business style up until this point has been to use our technologies and products to solve problems faced by customers. Put differently, we have been providing product value perspective. However, society is in the midst of rapid changes, with issues faced by customers becoming increasingly complex. Solving fundamental issues thus requires of us a business model that not only differentiates between technologies, but that also takes a broader view of social structures. This is why we are working for essential value perspective business expansion centered around IXI. We will evolve our business style into one that selects the optimal form of the social implementation of value, including in areas into which we have not yet forayed.

The other challenge is of collaborative creation. Given the current pace of the times, we cannot hope for innovation if we only pay attention to self-reliance. Furthermore, we will be changing our business style as well as making forays into new business fields, so the key will be who we work with in order that we can quickly acquire new technologies and business models that we do not yet possess. Since I assumed the position of CTO, we have put forth our policy of open innovation, as well as accelerated cooperation with external companies, start-ups, and research institutions. I expect that the know-how and partnerships gained from this will provide support for OMRON's self-driven growth.

P62 OVC →

— What is your approach to future technology development not only for new, but also existing businesses?

Within the Technology & Intellectual Property HQ, around 40% of the themes are for

technology development requested by our four business divisions, but this is of course not enough. Rather, it is important that we can unearth the multifarious requirements for technology that our business units have not yet picked up on. I would like more of a focus on technical development, which is planting the flag for business with technology as a starting point. Further, building black box technologies and related business models is indispensable if we are to deepen and evolve our existing businesses. Our arsenal includes our unique, difficult-to-reproduce algorithms for data analysis and providing feedback, and the question is how we can further polish these. This is a vital point for our ambidextrous management.

— The long-term vision for the next period is starting. As the CTO, how will you commit to this?

The COVID-19 pandemic has revealed a raft of vulnerabilities in the current global situation. Based upon the SINIC theory, at OMRON we believe that after achieving an optimized society formed from an integrated balance of humans and machines, we will arrive at an autonomous society in which social issues are resolved from a basis in these new values. However, achieving this requires that the three elements of science, technology, and society mutually stimulate each other and thus develop. Encouraging this synergy will deepen and evolve the very significance of our existence. Specifically, we see that OMRON's strengths can be demonstrated through points of interface between humans and machines. The more automation progresses not only in medicine and nursing care but also in manufacturing plants, the clearer the role of humans will become. This point of contact between humans and machines is precisely where OMRON excels—I'm proud to say that our capabilities for social implementation can hold their own. However, it is not so much our technical capabilities that enable this, rather our architecture capacity to discern social needs, commercialize these, and implement them in society. We are actively employing external human resource for architect to further strengthen this capacity. Of course, we have had many heated discussions as to the framework for a specific design for the near future, and how to incorporate this into a specific architecture. We will use these unrestrained discussions to ramp up the speed and quality of our "trial and learning" approach, while putting OMRON's particular style of technology management into practice.

Industrial Automation Business (IAB)

Domains

Factory Automation

Corresponding SDGs



With the vision to “Bring innovation to manufacturing by automation to enrich lives of people all over the world,” the Industrial Automation Business leverages OMRON technologies to generate innovations in manufacturing with a focus on automation. These innovations contribute to productivity advancements in the global manufacturing industry. We aim for a world where people everywhere are enriched by innovations at our customers’ manufacturing sites, with our technologies and solutions across a wide range of products at the top level in the industry, with our unique “innovative-Automation” concept.



Managing Executive Officer
Company President,
Industrial Automation Business Company

Junta Tsujinaga

VG2.0 Focusing on Innovation in Manufacturing

The environment surrounding the manufacturing industry is changing significantly. Changes are seen in “what to make,” “how to make,” “where to make,” and “who is making” as represented by increasingly advanced products, local production and consumption, and one-piece manufacturing, as well as seeds represented by artificial intelligence (AI), Internet of Things (IoT), robotics and other technological innovations. OMRON has been keeping up with these changes and aiming for advanced manufacturing with the unique value generation concept “innovative-Automation” since 2016, in order to solve issues facing manufacturing sites.

OMRON’s innovative-Automation has three pillars: “integrated (evolution in control),” “intelligent (development of intelligence),” and “interactive (new harmonization between humans and machines).”

With these three i’s as keywords, we have generated innovative control applications by integrating the extensive ILOR+S* product range with over 200,000 items, including software and services. We have created over 200 control applications in the past four years,

contributing to innovation at many customers’ manufacturing sites.

In terms of evolution in control, we are focusing on issues such as the aging of skilled engineers and a lack of successors to create control applications for work requiring ultra-high speed and precision, reproducing the “craftsmanship” of skilled engineers. Some of these applications wind film products with high speed and accuracy or laminate sheet products with high precision. These new applications properly respond to customers’ needs in digital industry, which change with greater performance of products (such as rechargeable batteries) or manufacturing methods. In the course of developing intelligence, we have created advanced applications that utilize information at manufacturing sites by adopting IoT or AI technology for control devices. Applications that predict product failures and equipment abnormality utilizing AI-based controllers and “sensory inspection” applications using AI-based vision systems that can detect defects beyond the five senses contribute to development of self-learning machines and no-failure production processes, respectively. The i-BELT co-creative data service is also highly regarded by customers for solving their issues through the collection and visualization of on-site data and data analysis in co-creative projects with customers. Further, in the context of pursuing new harmonization between humans and machines, we have realized new automations where workers and machines can collaborate by drawing out each other’s characteristics, utilizing autonomous mobile robots (AMRs) and collaborative robots. For example, the Mobile Manipulator (MoMa) mobile working robot, a combination of a mobile robot and a collaborative robot, contributes to flexible manufacturing that changes production lines depending on what to make.

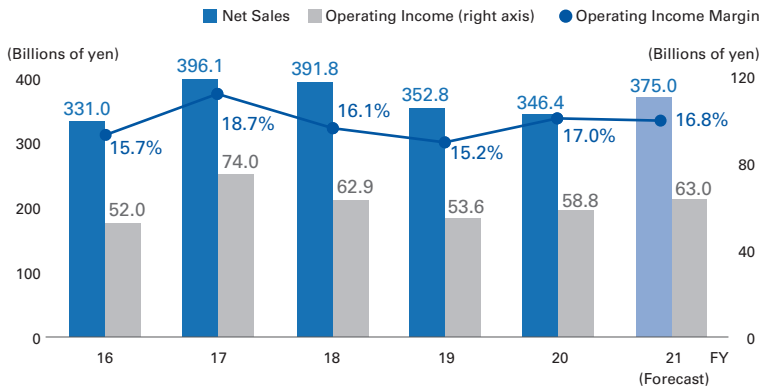
As mentioned above, we have developed products that enhance ILOR+S and implemented M&A alliances by focusing on developing applications that promote innovations for manufacturing sites with innovative Automation. We have also expanded infrastructure and human resources that help customers solve their issues. The number of Automation Centers (ATC) that reproduce manufacturing site devices and production lines with actual machine models, using applications created by combining the latest technologies and products, increased to 37 last year. ATCs welcome thousands of visitors every year, as Collaborative Creation sites where we verify and demonstrate solutions for manufacturing issues and create new applications with customers. Further, we have increased the number of sales engineers (SEs) with expertise in OMRON’s control technology and products and manufacturing site experience, strengthening their technology consultation capabilities for proposing applications and new solutions unique to each

customer. Currently, over 1,000 SEs are working on solving challenging new issues at customers' manufacturing sites.

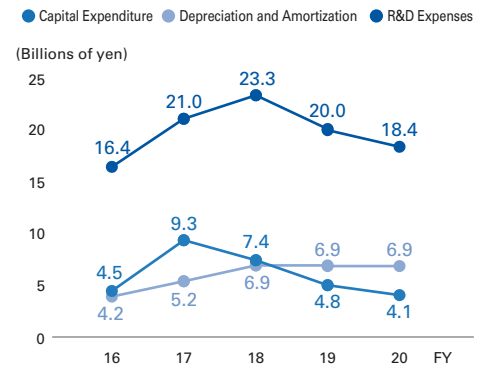
* ILOR+S is an abbreviation for Input (input devices such as sensors), Logic (control devices such as controllers), Output (output devices such as motors), Robot, and Safety (safety devices to ensure the safety of equipment)

Business Highlights

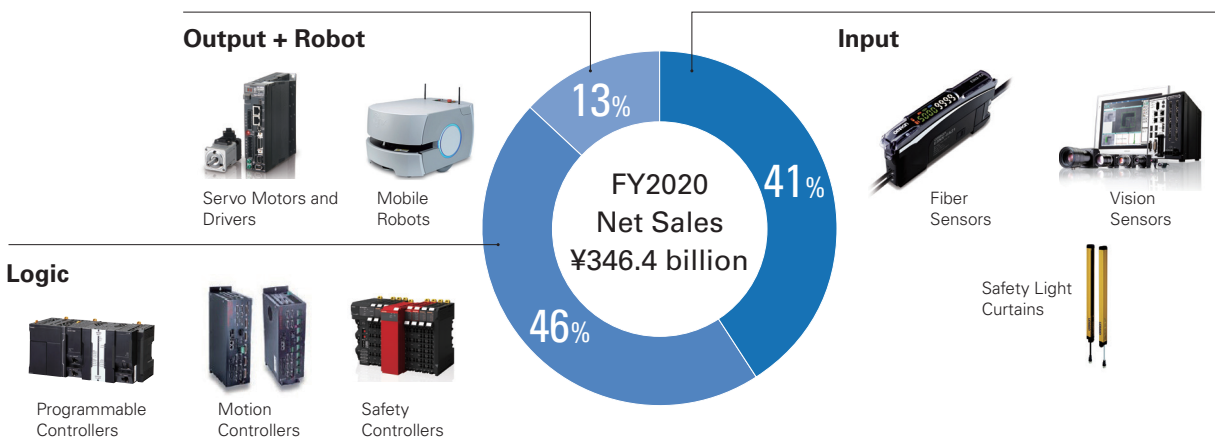
Net Sales / Operating Income / Operating Income Margin



Capital Expenditures / Depreciation and Amortization / R&D Expenses



Sales by Product



Social Issues to be Solved

- Labor shortages (shrinking labor force in developed countries and lack of skilled workers in emerging economies)
- Handling increasingly advanced and diversified manufacturing processes

VG2.0 Goals

- Developing new products to realize innovative Automation in the four focused industries (control technology for manufacturing innovation)

Actual Progress during VG2.0

INPUT

- R&D cost: Total ¥82.7 billion
 - Capital expenditure: Total ¥25.7 billion
 - Growth investment: Total ¥20.5 billion
- (Actual for FY2017 through FY2020)

OUTPUT

- Profitability improvements by value-added solutions, with GP ratio up 1.0 pt (vs FY2016)
- Deployed over 200 control applications that realize manufacturing innovation at manufacturing sites
- Strengthened product portfolio for innovative Automation improvement
 - M&A: Industrial code readers, industrial cameras
 - New products: Over 50 products such as robotic integrated controllers and AI-based vision systems (doubled from previous year)
- Official launch of co-creative on-site data solution business by i-BELT
- Increased number of sales engineers to embody control applications at customers' manufacturing sites (over 1,000 around the world)
- Increased number of Automation Centers around the world to 37 (was 8 as of 2016)
- Expanded business foundation into essential areas, such as mask manufacturing, medical and pharmaceutical industry
- Expanded production capacity for scaling up business (investment in second plant in Shanghai, China, etc.)

OUTCOME

- Contributed to economic development by enhancing social productivity through innovative-Automation



SDGs 8.2.1



SDGs 9.2.1



SDGs 17.16

Contributing to Solving New Social Issues under the COVID-19 Pandemic

Under our policy that OMRON bears a social responsibility to support manufacturing sites around the world as a company that has been involved in a core field of the manufacturing industry, we started to address COVID-19 pandemic immediately as well.

The outbreak of COVID-19 caused lockdowns and travel restrictions, leading to confusion not only for the manufacturing industry but also for various social infrastructures. Our Industrial Automation Business has been independently taking actions for this situation in order to solve various social issues caused by COVID-19 around the world. For example, we supported urgent production increases and the start-up of new production lines by proposing automation applications including industrial robots for worldwide shortages of masks, ventilators, and medicines. For hospitals and medical institutions busy with taking care of infected patients, we have contributed to automating labor-intensive sanitizing processes by developing mobile sterilization robots with UV lights and applications that automate the sanitization of medical equipment, collaborating with system integrators as partners. Also, for production of foods and daily necessities, which has become more serious due to the worsening lack of workforce under COVID-19, we have helped maintain production of consumables by deploying applications of collaborative robots that can work with workers.

We also started working on development of products to promote digital transformation (DX) globally, which was adopted to manufacturing sites earlier than planned due to the pandemic. Our robotic integrated controllers, which had their worldwide launch in July 2020, automate advanced and complex work that only skilled workers could do by seamlessly integrating robots and peripheral devices, as well as realizing remote engineering by precisely simulating technology in the real and virtual worlds. While travel restrictions are in place and access to production sites is limited all over the world due to COVID-19, this remote engineering has enabled us to commission production equipment and conduct maintenance remotely. For the new issue of travel restrictions, we have enabled remote performance of checks that were done by production engineers and maintenance personnel onsite, reducing workloads by over 50% for processes like equipment start-up and maintenance. Also, with online factory tours and virtual ATC tours, we have been contributing to customers' continuous production activities by strengthening global consultation activities by our SEs and sales teams utilizing our digitalized infrastructure.

OMRON has deployed these applications in our own factories and utilizes them for maintaining production activities amid the COVID-19 crisis. The OMRON Shanghai manufacturing site improved workers' work efficiency and realized unified production and quality by machines supporting workers with data, after adopting the Cell Line Control System (CLCS), an intelligent production line where workers and machines work together utilizing on-site data. As a result of addressing new social issues due to COVID-19 crisis, we were able to contribute to continued production activities in the global manufacturing industry.



Manufacturing floor where humans and machines work in harmony



Mobile robot equipped with UV light irradiator to prevent infection



Mobile robots that transport medical waste at hospitals in Finland

Industrial Automation Business in the Post-COVID World

While production and social activities under COVID-19 become the new normal, changes in the market and society have been accelerating globally towards the post-COVID world. This shift includes acceleration of green recovery actions including increased use of electric vehicles (EVs) and renewable energy and shifts to eco-friendly materials. This will also drive changes to infrastructure for realizing a digital society, represented by increased demand for semiconductors, 5G and DX. OMRON views these changes as significant business opportunities for our IAB business and is preparing to respond to various market needs based on technologies and products developed during VG2.0 and many control applications that embody innovative Automation.

As COVID-19 has significantly changed people's lifestyles, ways of working, and values, the post-pandemic manufacturing industry will not simply go back to what it was before COVID-19. Social issues such as aging of skilled engineers, lack of successors, and shortage of workforce are further accelerating, along with increased market needs for new automation. Amid these challenges, OMRON is further driving DX in manufacturing. For example, we joined Nokia's Local 5G Technology Partnership to develop solutions that utilize 5G, collaborating with other partner companies as well. We are also working on realizing automated solutions that can respond to the growing need to shift from a centralized production structure to region-based diversified and close-to-consumption production as quickly as possible. Examples include CLCS that utilizes mobile robots and collaborative robots modularize production equipment, aiming for production lines that can be started up in short periods of time according to what to make or manufacturing locations.

Issues of manufacturing quality are becoming more serious due to the aging of skilled engineers and lack of production engineers, along with higher demands for quality from markets and consumers. Our "i-BELT" service, with advanced AI technology, can help manufacturers to continuously maintain and improve manufacturing quality, turning skilled engineers' know-how into reusable assets.

For the globally increasing green recovery, we have started developing new solutions in various fields by collaborating with customers. To combat marine pollution due to plastic waste, we are participating in initiatives to change packaging materials to renewable biodegradable plastic in partnership with food and consumable manufacturers and machine manufacturers. We have also been contributing to the growth of green energy use by developing durable, high-quality parts in collaboration with manufacturers of key parts for wind power generator manufacturers. OMRON will continue these initiatives that enrich lives of people all over the world by innovating manufacturing with automation, in response to various post-COVID market changes.

Innovations in Manufacturing by innovative-Automation

intelligent
Development of intelligence

integrated
Evolution in control

interactive
New harmonization between humans and machines

i-Automation!
Driving innovation in manufacturing with three i's

- Sensory inspection to automate visual inspection relying on human's senses**
- Equipment failure prevention to predict equipment failures with AI**
- Non-stop high-precision alignment systems to position parts moving at high speed at the micron level**
- Robotic integrated solutions to precisely synchronize industrial robots, machines, and peripheral devices**
- High-speed 3D picking machines to automate picking of bulk parts by robots**
- AI-based tightening inspection to predict and correct screw tightening variance in real time**
- "Cell Line Control System" where workers and machines collaborate and machines support unskilled workers with data**
- Flexible cell line where mobile robots carry parts and products**

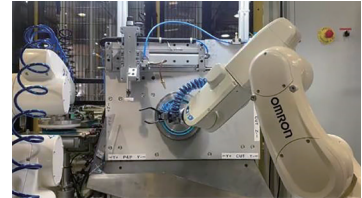
integrated (evolution in control)

Improvement of the Engineering Experience on a New Architecture - Integrated Solution for All Machine and Robot Control, an All-in-one Platform

Trelleborg Sealing Solutions is a leading global supplier of sealing solutions. With their wide range of patented product designs for static and dynamic sealing systems, Trelleborg's Livorno Plant in Italy provides high-quality thermoplastic polyurethane (TPU) sealing solutions for a wide range of hydraulic and pneumatic applications, along with accessories.

To support rising demand for green energy resources as well as favorable government policies to encourage renewable energy, Trelleborg decided to increase production of polyurethane parts for wind power generator turbines and needed to add flexibility in manufacturing to support various type of products. Their wish was to reduce the time for setting and programming a new trimming machine that comes with two robots for seals finishing and can be operated on a single platform.

Trelleborg then employed an OMRON-proprietary robotic integrated controller, which can enable real-time synchronization between all relevant equipment, including robots, vision sensors, drives, and safety devices, facilitate easy programming for in-house technicians, improve the speed and accuracy of production, simulate the entire production line, streamline maintenance, and reduce time to market. As a result, Trelleborg has shortened its cycle time by 30%, leading to speedy delivery. With the new architecture, the production engineering team can build the machine in a shorter time, streamlining a formerly time-taking and complex task. With its unique combination of robots, software and integrated control architecture, OMRON will continue challenging to meet today's social issues as well as expanding green energy with our customers.



Two OMRON robots shaping blue polyurethane circle parts

As a world leader in engineered polymer solutions that seal, damp, and protect critical applications in demanding environments, our innovative solutions accelerate performance for customers sustainably and support environment-friendly activities. With OMRON as our partner, we were able to satisfy a sudden demand increase for several applications in the fluid power, agriculture and energy segments. For this project, we expect a pay-back period of about two years, with future plans to develop and introduce three more machines in the coming three years. It is also interesting to look at further possibilities, as OMRON's product portfolio can cover the whole production process such as machine tending by collaborative robots and intralogistics with mobile robots. I am excited to take manufacturing to the next level with OMRON and to contribute to a more sustainable society.

TRELLEBORG



Machinery and Energy Supervisor Trelleborg Sealing Solutions Livorno

David Caluri

integrated (evolution in control)

OMRON's Perfect Sealing Technology Solution to Drive Sustainable Manufacturing

Plastic containers may be convenient, but they are detrimental to the environment, causing environmental pollution and risking harm to marine and terrestrial life with the resultant microplastics. To avoid these tragedies and achieve a sustainable society, many companies, especially in food and commodity industries in Europe, are taking on the challenge of making products with other recyclable or eco-friendly materials to use less plastic.

OMRON supports this challenge of sustainability with our Perfect Sealing technology. Unlike conventional virgin plastics, recycled materials tend to be more vulnerable to heat and require higher precision in handling for production. Thus, drawing on high-precision temperature control technology that has been refined in other industries, such as semiconductors, OMRON achieved a solution to monitor the machine's speed and the pressure and temperature being applied to the sealing process. This enables a new recyclable paper-based film to be formed as planned.

As a result of improved product quality, our customers have been shifting to eco-friendly manufacturing with our products at an unexpectedly high pace. With our customers, OMRON will continue to lead the movement of sustainable business and manufacturing globally, driving superior business performance for customers and a better society for all.

Employee Comments

The project was not without its challenges along the way. We required multiple sources of support from OMRON businesses globally and coordination from different OMRON departments. However, with our passion for contributing to solving marine plastic waste problems, the teamwork and attention to detail shown by OMRON members around the world led us to success in this project. I am extremely proud of the team members supporting this project and multiple installations around the world. The accomplishment was also awarded the gold prize at TOGA for FY2020 as an outstanding example of OMRON Corporate Principles practice out of 6,461 entries. The next challenge is to secure our Perfect Sealing specifications, locking this solution into the DNA of the customer's ongoing advances in digital manufacturing.



Global Account Manager Industrial Solutions, OMRON Electronics Ltd.

Allan Gibbons

intelligent (development of intelligence)

Realizing evolving manufacturing sites through Collaborative Creation with customers

Today, society is transforming with focus shifting from things to experiences and services. Ahead of this shift, OMRON has been providing an on-site data utilization service “i-BELT” that improves productivities and qualities of manufacturing since 2017. With the i-BELT service, OMRON combines customers’ knowledge with our unique know-how in control devices and software that we have accumulated as a company well-versed in front-line manufacturing operations, thereby taking on various field tasks. Kaneka Corporation, which provides solutions to various social challenges with its cutting-edge technology based on chemical material development, had been working on solving errors in transporting materials in the production of high-performance film. In order to minimize operational losses due to the film transporting errors, OMRON started collaborating with the customer by providing the i-BELT service in February 2020. First, we tried to identify causes of the errors in the relevant process by using the vibration measurement system. This system can collect and monitor various data via multiple sensors installed within the production line. Together with Kaneka, we strived to build a framework to visualize the production line, while repeatedly verifying hypotheses on causes and signs of transporting issues through continuously analyzing collected data. As a result of verifications, the abnormal signs monitoring system was created, which can detect abnormality in the film production line, based on waveform data of the sensors. With this monitoring system, even less experienced workers can check changes in the film production status, succeeding in suppressing errors. In order to realize evolving manufacturing sites, we contribute to innovation in manufacturing with proposals for process visualization and solutions to challenges our customers are facing.

At Shiga Manufacturing Site, Kaneka continues activities for improvement on a daily basis to pursue the purpose of providing reasonable and high-quality products safely. In this task to stabilize film transporting, we made most strenuous efforts to quantify operators’ sensory information among others. The quantification has been established by sensing and data analysis with OMRON, and the improvement has been made steadily. I am impressed by OMRON’s approach where their engineers always make discussions together with our engineers based on i-BELT data analysis before employing a new solution. As a result of these efforts, we were able to address challenges as a team beyond the company, and reduce transporting errors with satisfaction. I am looking forward to tackling new challenges together with OMRON in the future.

kaneka



Manager of AI & Digital Platform Center Shiga Manufacturing Site Kaneka Corporation
Koji Hanada

interactive (new harmonization between humans and machines)

Automating Small Waste Logistics in Finnish Hospital with Mobile Robots

Labor shortages have long been a major problem in social welfare and medical fields globally, especially in Finland. With the spread of COVID-19, this problem has become a serious social issue. According to a survey conducted by the Finnish hospital union, the majority of nurses are considering leaving the medical field.

Under these circumstances, OMRON has collaborated with a major hospital, universities, and the partner system integrator Dimalog Oy Ltd. to develop a medical waste transport automation system using mobile robots, which are usually used in factories. In this project, the team focused on the daily work of hospitals that does not require human-to-human interaction and could use robotics and IT technology, and they aimed for a state in which robots take on this routine work on a daily basis. The pilot experiment was conducted to automatically transport the waste generated in the hospital’s clinical chemistry laboratory to the waste collection center in the basement of the hospital. To automate waste transportation, OMRON worked with Dimalog to develop a control system for mobile robots to transport waste on request using a button or according to a schedule, while optimizing the mobile robots’ travel route.

OMRON will continue to contribute to labor saving in hospital operations, starting from the development of disinfecting robots mounted with a UV light irradiator to prevent the spread of infection, automated hospital floor cleaning, automated medical waste transportation, and other solutions to address new social issues in the medical field caused by the COVID-19 pandemic.

Conducting the pilot experiment during the COVID-19 pandemic was a unique challenge, but it was also an interesting opportunity to witness how OMRON’s autonomous robot technology can easily handle simple hospital transport tasks and enable the human staff to focus on more critical work amid the pandemic. The test gave us a lot of ideas and insight into how the future of hospital environments can be shaped by robots and smart technology. All participants in the trial were impressed by the results and we are currently discussing several future robot tests and projects for the Finnish health care sector.

Dimalog



CTO, Dimalog Oy Ltd
Teemu Kytömäki

Electronic and Mechanical Components Business (EMC)

Domains

Devices and Modules
to Support the Growth
of OMRON

Corresponding SDGs



The mission of the Electronic and Mechanical Components Business (EMC) is: “With our devices and modules, create customer value, and contribute to people and society on the planet.” EMC’s relays, switches, and connectors play vital roles in switching and connective devices, and sensors act as eyes and ears for a wide variety of products. As one of OMRON’s core business units, EMC provides these essential components to customers worldwide in various fields, including home appliance and automotive manufacturing, that support the safety and security of human life.



Managing Executive Officer
Company President, Electronic
and Mechanical Components
Business Company

Shizuto Yukumoto

Building a Foundation for Self-driven Growth Engines and Transforming Our Business to Create and Maximize Value for Customers

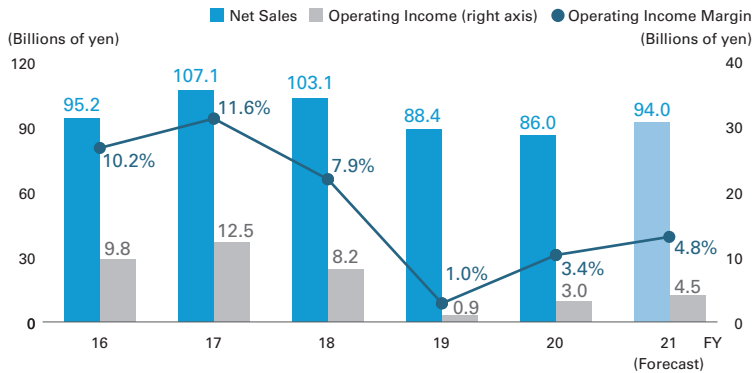
Aiming to be a business unit that creates value for customers, at EMC we support the growth of OMRON’s target domains with our cutting-edge technologies and reliable manufacturing technologies built over years. Social issues have become more varied and serious in recent years, and our business environment, customers, and competitors are changing drastically. Customers are seeking partners that can flexibly respond to social changes and technology innovation. In addition, electronic components have become a commodity, and new competitors are arising from emerging countries. In such a market environment, OMRON will continue to resolve issues at the customer level with its high-quality products and technologies.

During VG2.0, we made various efforts toward value creation in order to build a foundation for sustainable self-driven growth. We conducted organizational reforms and quality improvements as well as developing modules with high added-value that fulfill customers’ requirements. In terms of organizational reforms, we put great emphasis on optimizing production processes so as to reorganize our manufacturing sites from 11 to 7 to supply our components steadily. Building a flexible production system to meet varying demand has successfully improved our capacity utilization rate and production efficiency. In terms of quality improvements, our manufacturing processes, from the development and design stage to production and completion, are thoroughly assessed from the standpoints of verification and validation. Strengthening our quality control system has improved our component quality to ensure the safety of customers’ products. Based on our “self-driven” growth structure, we have identified changes in customers’ requirements and new demand for technology innovation and environmental protection, such as smart products and battery development/direct current power systems, and created a variety of devices and modules. In fiscal 2020, quickly recognizing demand for computer accessories, electric tools, and non-contact applications due to the COVID-19 situation, we developed new products in a timely manner to meet additional demand and customer requirements. The COVID-19 pandemic accelerated the digitalization of society, and demand for semiconductors and electronic components has increased for development of batteries as power sources and 5G infrastructure. Requirements for electronic component functions keep changing due to the diversification of lifestyles and environmental changes, providing OMRON with more opportunities to enhance the value of customers’ products. We strive to identify any changes in society and accelerate our R&D to create new products in a timely manner. Furthermore, to improve human life on the planet and develop society, we will keep providing customers worldwide with relays, our main driver, and switches and sensors, our leading products for business growth. There are serious social issues requiring solutions, such as global warming and workforce shortages caused by an aging population and declining birth rate. To realize a carbon-neutral society and safe and secure communication infrastructure, more sophisticated component functions are required for the development of EVs and reliable communication platforms for all. Present circumstances are forcing customers to review all conventional design methods, components, and materials, which means that new market needs are being created. At EMC, we will

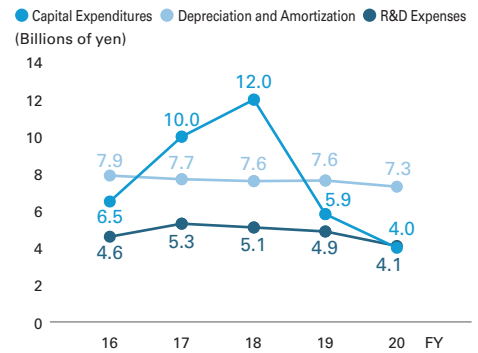
determine our target domains, identify design issues for customers' products from the early development phase, and resolve social issues with our core technologies, namely "precise processing technologies" and "combinations of technologies". We will continue to offer essential key devices in order to achieve ideal solutions to the aforementioned social issues with our customers.

Business Highlights

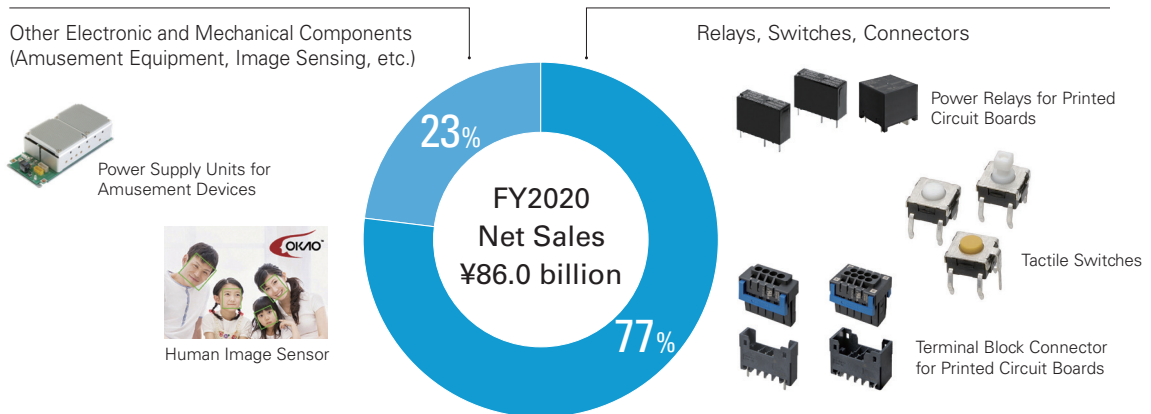
Net Sales / Operating Income / Operating Income Margin



Capital Expenditures / Depreciation and Amortization / R&D Expenses



Sales by Product



Social Issues to be Solved

- Social issues related to "FA", "Healthcare", and "Social Solutions"

VG2.0 Goals

- As a device and module business unit supporting focus domains, contribute to achieving sustainability goals in each domain

Actual progress during VG2.0

INPUT

- R&D cost: Total ¥19.5 billion
- Capital expenditure: Total ¥32.0 billion (Actual for FY2017 through FY2020)

OUTPUT

- Restructuring
The optimization of production locations for stable product supply (globally, 11 locations to 7 locations)
The establishment of flexible production systems to respond to changes in demand for components
- Strengthening of quality control platform
The enhancement of product quality to ensure safety for customers' products
OMRON Relay & Devices Corporation obtained UL DAP certification (October 2018)
- The development of next generation devices, modules, and technologies
R&D of new technologies and products (example: shut-off relays for battery capacity expansion aiming for a carbon neutral society)
The creation of non-contact applications required for the "new normal" of living with COVID-19

OUTCOME

- Contribute to the improvement of human life on the planet and development of society by providing devices and modules



SDGs 9.4.1

Creating New Customer Value with Strong Quality Control Platform

During VG2.0, in order to achieve organizational growth, EMC has improved its capacity and speed to create customer value. Below we outline our approaches to strengthening our quality control system and developing solutions to social issues caused by the COVID-19 crisis.

Strengthening Quality Control to Ensure Product Safety and Increase Customer Value

OMRON rolled out three new initiatives aimed at improving quality control to deliver high-quality electronic components that ensure the safety of our customers' products.

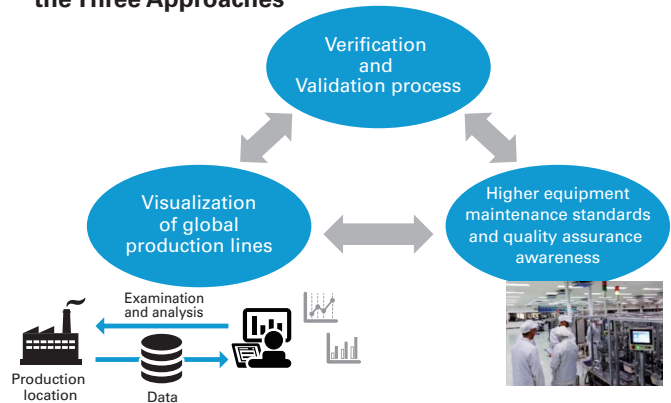
The first is improving the verification and validation process in the entire manufacturing cycle. A scientific approach is applied to verify that customer requirements are met in accordance with product specifications, design, and requisite quality. By connecting production data right from the beginning of the design stage, we ensure that all parts are consistently and properly produced. The foundation of our quality assurance system has evolved through the implementation of these actions to identify and prevent quality issues at an early stage of the manufacturing cycle.

The second approach is refining equipment maintenance standards and raising awareness of quality assurance. The conditions of production equipment vary every day in the course of production. Solving this issue required "harmonized adjustments" to ensure the right finish, but as a result, different problems arose across the manufacturing process. The steps we took got back to the basics of manufacturing to renew our awareness and recognize that the action of "harmonized adjustment" will always be accompanied by change and hence to enhance our change management. We took the same approach in all our global manufacturing sites and at the same time streamlined data sharing among locations to allow

them to see each other's activity status. By sharing best practices across factories, we strive to maintain high quality standards.

The third approach is implementing data visualization to monitor production lines in real time. Installing a system that traces the manufacturing history of all of our seven factories around the globe and diagnoses changes in the manufacturing process allows us to identify the causes of quality defects at an early stage as well as specifically pinpointing the extent of their effects, and ultimately minimize loss of performance. Furthermore, our quality data visualization provides a quick and effective way to detect anomalies and problems. By taking a comprehensive approach, we strive for higher levels of product quality.

Strengthening Quality Level by Combining the Three Approaches



Employee Comments

We focused on three actions at manufacturing sites to promote understanding of what it means to "get back to the basics of manufacturing." The first action was visiting local manufacturing sites to repeatedly discuss the primary purpose of this activity until we were sure that all of us had gained a clear understanding of it. The second was to coordinate with staff members on site for practical improvements. And the third was to visualize the outcomes of those improvements. These approaches, which were first introduced at a single factory, helped the staff members gain understanding of the basics of manufacturing through actual experiences. By doing the same in the other factories, more and more people came to realize the importance of this through better understanding. As we continued promoting awareness and understanding of quality assurance, we were able to make improvements and move towards the common goal of creating value for customers in our factories.



Quality Management Division,
Quality Planning Department

Toshihiro Ishii

Obtained UL DAP Certification for Contributing to Timely Product Release

The Yamaga Factory of OMRON RELAY & DEVICES Corp. is the production base for relays, one of our main products.

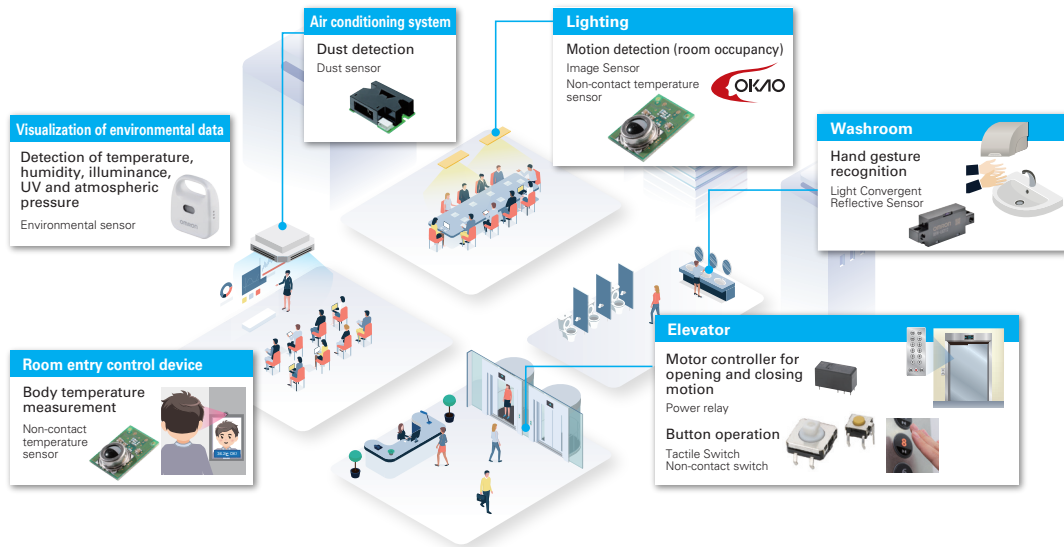
By establishing a robust quality management system and enhancing technical capabilities, it has been assessed by UL, an American third-party safety science company, and became eligible to participate in the Data Acceptance Program (DAP: Customer Assessment Data Utilization Program). We qualified to participate in the CTD (Client Test Data Program) in October 2018, one of the DAP's programs, and have maintained continuous participation since that date.

The ability to conduct UL's safety standard certification testing at our factory has enabled us to speed up the release of new products.



UL DAP Certification

OMRON's electronic components such as relays, switches, and sensors play important roles in various settings such as office environments that will ultimately create sustainable smart cities.



Development of Touch less Hybrid Elevator Switch to Create a Safe Living Space

The COVID-19 pandemic has increased the need for “touchless” operation in various settings to avoid multiple people touching surfaces and objects. Elevator buttons are among such settings, and touchless switches were being considered as a solution. OMRON recognized the demand in a timely manner and quickly took action by partnering with FUJITEC, the leading provider of elevators and escalators, to develop a touchless hybrid elevator switch ahead of the market trend.

OMRON's touchless hybrid elevator switch enables hands-free operation that provides a tactile sensation as if actually pressing a button. The switch was developed by combining core technologies central to EMC, embedded with a sensor for touchless interface and a durable push-button-style design to realize an integrated compact switch. We collected survey responses from hundreds of people and conducted numerous trials to precisely adjust the specification to human senses before moving to commercialization. As a result, we achieved a universal design usable by all people to make the product easier to use for everyone. The switch is used in elevators manufactured by FUJITEC and rolled out in December 2020 for offices and shopping malls. These elevators help reduce infection risk and contribute to building an infrastructure of safe elevators.

We plan to continue working on solving social issues together with our customers by improving our core technologies and providing touchless solutions.



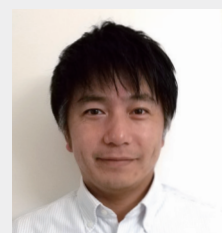
Diversified Products Division, Business Management Division HQ

Tetsuya Sumiyoshi



Business Management Department Touchless hybrid elevator switches used for an elevator at GINZA PLACE, an integrated commercial facility at the Ginza 4-chome intersection

FUJITEC aims to realize a “beautiful city appropriate for the new era” through the business of supplying elevators, escalators, and moving walkways. We started developing a new button focused on touchless elevator operation during the COVID-19 pandemic last year, and requested a joint development project with OMRON, considering their remarkable achievements in button operation products. As a result, we successfully developed a touchless elevator button that satisfied universal design standards, which is now installed in various places. We plan to continue development of various interface devices for the next-generation society. We look forward to working more with OMRON in search of solutions to our needs and collaborating in joint development projects.



R&D Department Center, Product Development HQ FUJITEC CO., LTD.

Noriyoshi Hagizawa

Social Systems, Solutions and Service Business (SSB)

Domains

Social Solutions

Corresponding SDGs



Social Systems, Solutions and Service Business (SSB) has been working on realizing the society where people can live more comfortably. Our mission is “to create a society in which the people of the world live in a safer, more secure and comfortable society.” We support social infrastructure by providing solutions that optimally combine a wide range of hardware, software and services. These include power conditioners for solar power generation, storage batteries, railway station systems such as automatic ticket gates and ticket vending machines, traffic control systems, settlement systems, and network protection systems such as UPS.



Managing Executive Officer, President
OMRON SOCIAL SOLUTIONS CO.,LTD.

Toshio Hosoi

Creating a Next-generation Social Platform so that People Can Flourish and Live Safely and More Comfortably with Social Automation in the Future

During VG2.0, SSB recognized lack of labor force as a social issue to be solved. Therefore, we have attempted to eliminate inconveniences in daily life through various solutions, such as automation of reception work at hotels and labor saving for cleaning, security and information services at stores and buildings. Also, toward the further solution of social issues and sustainable growth, we integrated our UPS business in 2018 and environment business in 2020, providing access and value to new markets such as housing, distribution, information infrastructure, municipalities, and manufacturing industries

However, we are still required to solve more social issues not only for issues for certain markets or customers but also by deploying solutions

to multiple markets. In addition to solving issues at the manufacturing sites we have been focusing on, we are also working on standardizing and enhancing services that can be provided to various industries and building an operation system.

With outlook for the next 10 years, we recognize “environment (carbon neutral);” “resilience” and “labor saving” as the social issues to be solved. Social issues such as increasing CO₂ emissions, accelerating climate change and lack of labor force due to accelerating decrease of birth rate and aging population could cause various inconvenience and concerns in our daily life. For companies, management issues are becoming more complex with the need for business continuity and solution environmental issues. Efficient business management and manpower saving are therefore urgent issues to solve. We need to resolve not only manufacturing issues by providing existing devices and services, but also customers’ management issues.

To achieve that, we need to improve ourselves as well. In addition to responding to customers’ needs, we will create a future society that is safer, securer, and more comfortable by identifying changes in society proactively. Furthermore, we will aim to realize next-generation social systems with the social automation that we obtained in our SSB.

For example, in energy area, in addition to provision of renewal energy we have been working on, we will also work on the realization of area energy management that provides optimal balance of energy demands-supplies in the level of households and facilities in the future. We will start to contribute to spread development of renewable energies by deploying PV inverters and storage battery systems that we have provided for households to manufacturing industries and municipalities, utilizing SSB’s wide range of business areas. Further, by connecting each energy and sharing electric power, we will contribute to carbon neutral and maximized energy usage at regional levels, such as power storage in preparation for disasters.

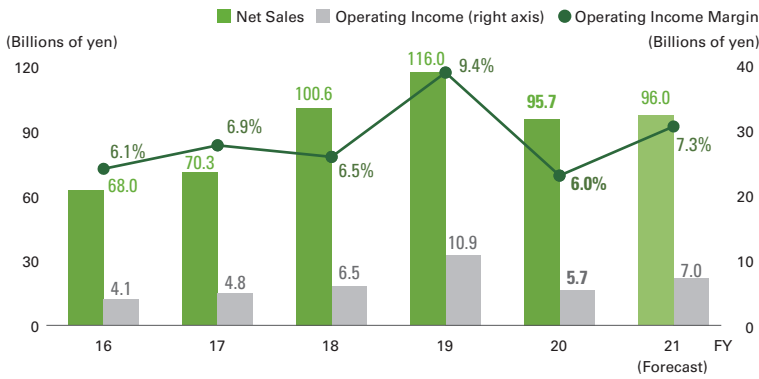
Labor shortage is also becoming a serious issue at many industries that support necessary infrastructure for living, and it is thus required to improve efficiency of operation while maintaining services. We have been providing devices and systems along with maintenance services for safe system operation, contributing to resolving issues at customers’ manufacturing sites and maintaining social systems. Moving forward, we will work on manpower saving and strengthening operations by comprehensively supporting remote monitoring/operation of devices and systems that customers are working on, and management services that solve customers’ issues by improving and optimizing

work operation processes.

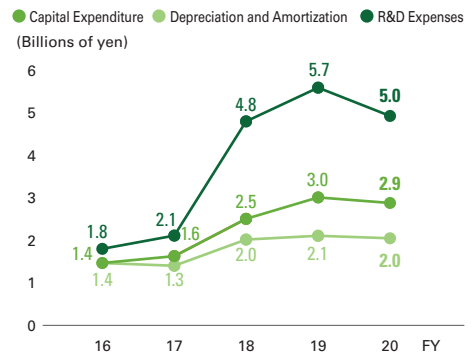
We will continue to take on the challenge of creating next-generation social systems that support a society where people can live safely, securely and comfortably, resolving the issues of the future with automation that allows people to thrive

Business Highlights

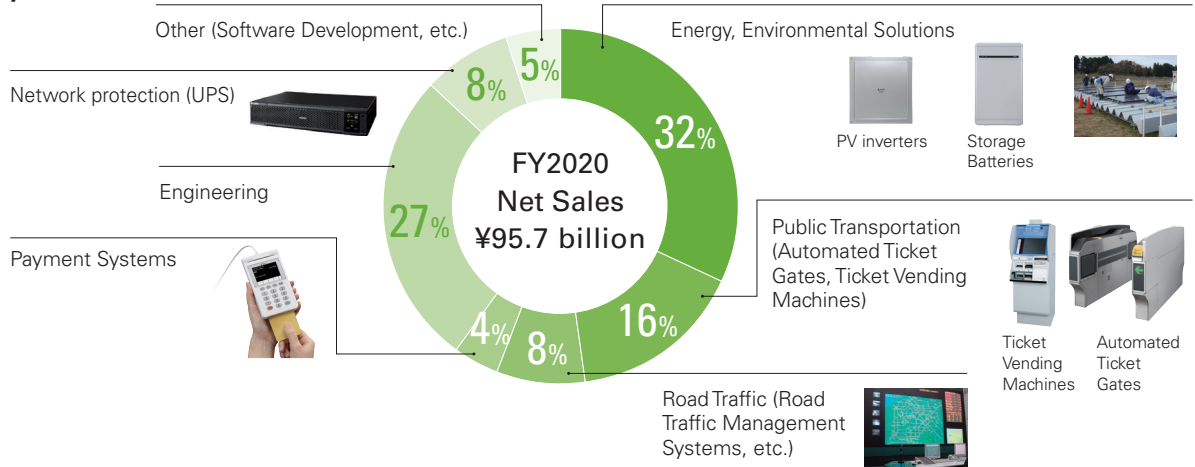
Net Sales / Operating Income / Operating Income Margin



Capital Expenditures / Depreciation and Amortization / R&D Expenses



Sales by Product



Social Issues to be Solved

- Increase in traffic accidents and traffic jam
- Global warming from CO2 emissions
- Slow growth of the renewable energy market

VG2.0 Goals

- Create driving safety support systems and technologies
- Cumulative shipped capacity of solar power/storage battery systems: 11.2 GW
- Build the energy resource aggregation business using solar power/storage battery systems (Japan)

Actual progress during VG2.0

INPUT

- R&D cost: Total ¥176 billion
- Capital expenditure: Total ¥10 billion (Actual for FY2017 through FY2020)

OUTPUT

- Analysis and verification on the relationship between change of driving behaviors in certain psychological state and risks, such as joint research on driving risk detection with universities.
- Provided automation and labor-saving solutions for reception, guidance, cleaning, security works for industries with serious lack of labor force.
- Provided energy composition and energy management system that respond to various needs, such as maximized power generation efficiency, self consumption or business continuity measures.
- Cumulative shipped capacity of solar power systems: 10.3 GW
- Cumulative shipped capacity of storage battery systems: 695 MWh
- Provided data power source, power source protection and monitoring system for disaster prevention in response to many natural disasters due to climate change.

OUTCOME

- Contribute to realize a better society in which people around the world can continue to live in a safer, more secure and comfortable society by expanding renewable energy and providing people-friendly next-generation systems.

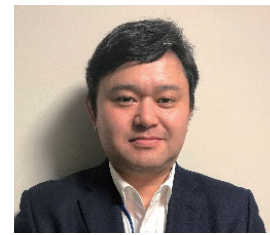


Aiming for Carbon Neutral with Renewable Energy

We have been experiencing many natural disasters due to climate change in recent years. Actions are being taken around the world aiming for carbon neutrality that aims for zero emissions of greenhouse gas (GHG), including CO₂, the cause of climate change, by 2050. One of the actions is to increase usage rate of renewable energies. Companies are also required to take approach to realize 100% of renewable energy for electric power used in business activities (RE100*).

Resolving Issues at Manufacturing Sites with Abundant Industrial Knowledge and Engineering Skills

Murata Manufacturing is a company that joins RE100 and leads CO₂ reduction at many regions by increasing the rate of renewable energy for electric power used. While the project is proceeded to introduce solar power systems in domestic business locations, Okayama site of Murata Manufacturing had issues with installment location. OMRON, as a member of the project, verified the possibilities from stand point of insolation, intensity, cost and operation control, and suggested utilization of “air space” above the company parking for approximately 1,700 cars as the installment area. A carport type power generator (simplified garage with roof and columns) was adopted and double sided solar panels were also installed to maximize its power generation, as they can generate power from reflection on the back side of roof. Further, OMRON’s original remote monitoring and maintenance service (soramoni) prevents loss of generation due to equipment failures and enables maintaining power generation amount for a long period. Murata Manufacturing’s complete solar power plant (carport type solar power generation system) enables power generation for 850 general household annually, with estimated 2,394 tons of CO₂ reduction. Companies will be the leaders for carbon neutrality—Murata Manufacturing and OMRON will continue to work on this challenge.



Construction Department,
EM Design Section
OMRON FIELD
ENGINEERING CO., LTD.

Tatsunori Katagiri



Left: No.1 Solar Power Plant
Right: No.2 Solar Power Plant

Realizing Sustainable Society with Energy Optimization at Regional Levels

In Japan where spaces for solar panel installment are limited, this achievement of Murata has huge potential. Moving forward, with OMRON’s industry knowledge and high engineering skills, we will promote introduction of optimal solar power generation system not only for companies but also for households and municipalities. Moreover, we will contribute to the realization of a carbon neutral and sustainable society with area energy management that provide optimal energy uses at the level of regions.



Carport type solar power generation system

Murata Manufacturing manages its business with reinforcement of climate change countermeasures as a material issue. We consider the introduction of carport type to be effective as a measure for solar power generation at offices. We will continue to promote energy saving in partnership with OMRON FIELD ENGINEERING CO., LTD..

General Manager, Facility Management Department
Murata Manufacturing Co., Ltd.

Shigehiro Sakata



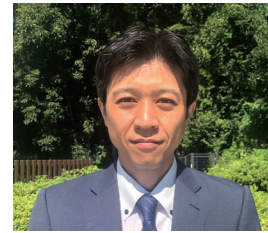
*RE100 is an international environmental initiative that aims for a 100% renewable energy rate in business activities by 2050.

From Providing Systems to Management Service—Creating the Next Generation of Railway Station Management

Lack of labor force due to shrinking working population is becoming more serious year by year. Since its foundation, OMRON has been contributing to improvement of railway station management for railway companies by providing systems and maintenance services such as automated ticket gates, ticket vending machines and remote monitoring systems for equipment. On the other hand, issues in railway companies are becoming more and more complex with challenges such as the needs for non-contact due to COVID-19 crisis as well as business continuity measures for disasters or response to inbound travelers.

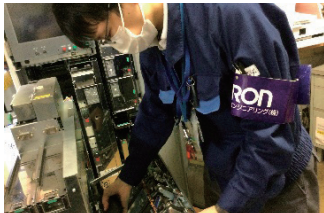
Supporting Head Office's Station Management Work by Offering Device Operation Support Service

In pursuit of safety, stability and security, the head office of Odakyu Electric Railway used to support station employees at all railway lines in the operation of railway station systems and response to abnormalities. However, it was a huge challenge for Odakyu with 70 stations to maintain support systems while improving efficiency. As a solution for this, OMRON started up a device operation support desk in 2012 and started outsourcing service to address inquiries of device operation and failures regardless of the device manufacturers, in response to inquiries from employees at stations. Since then, this has been not only saving manpower at the head office but also contributing to stable operation of railway station systems, seamlessly and immediately responding to inquiries for abnormalities and meeting on-site needs. We have accumulated achievements and won trust over 10 years now, and are continuing to provide smart maintenance utilizing ICT and new value to further optimize railway station operations.



Station Smart Service Promotion Section
Social System Support Department
Field Service Business Head Office
OMRON FIELD ENGINEERING CO., LTD.

Hiroshi Watanabe



Maintenance work at station halls



Device operation support desk

Providing Safe, Secure and Comfortable Station Service to All Users by Strengthening Railway Station Operation

How to operate stations efficiently and properly while responding to change of society and travelers' needs; this cannot be solved by single system or service. Going forward, we will strengthen station operation and realize attractive services for travelers by providing not only device operation but also a management service that comprehensively supports operation of stations from planning to system introduction, operation, maintenance and improvement with our know-how and knowledge on sites that we obtained through developing public transportation systems and performing maintenance services over a long time.

It is very helpful that we can have timely information at sites. This leads to smooth communication with station employees and improves services for customers through the support desk. Also, new insights are suggested to us every month at monthly reporting meetings. We look forward to even speedier collaboration in the future.



Customer Sales
Odakyu Electric Railway Co., Ltd.

Yasutaka Inoue

Healthcare Business (HCB)

Domains

Healthcare

Corresponding SDGs



The mission of our Healthcare Business is “To help realize healthy and comfortable lives for people around the world.” By living up to this mission, we have developed healthcare products and services with a focus on usability and accuracy of readings that ensures reliability for medical use. OMRON has achieved certification for medical use for a variety of devices in various countries, including blood pressure monitors, digital thermometers, and nebulizers. Moreover, OMRON also provides services that are compatible with each country’s/region’s social infrastructure and healthcare system, which varies from country to country. These products and services are now available in more than 110 countries across the world.



Managing Executive Officer
OMRON Healthcare Co., Ltd.
President and CEO

Isao Ogino

A New Challenge to Achieve Zero Events by Globally Driving Remote Patient Monitoring Services

During 2020, the COVID-19 pandemic drastically changed people’s awareness and ways of living, also impacting social infrastructures around the world to become the “new normal” in people’s lives. With the increasing need to take body temperature readings that the “new normal” has dictated, we reinforced the production system to increase capacity in our Dalian Factory, China as we expand product supply. In October 2020, an additional thermometer production line was installed in the Matsusaka Factory, Japan to ensure a stable supply of products.

The spread of COVID-19 saw new issues begin to emerge. These include increased risk of infection from hospital visits and a growing workload for medical professionals due to an increase in COVID-19 patients. In particular, the risks for patients with chronic diseases such as hypertension and diabetes become higher once infected. The fear of potential infection caused many chronic disease patients to avoid

regular hospital visits, causing them to suffer worsening conditions. During the past year, this particular issue became rather prominent.

These types of social changes make achieving our Cardiovascular Business vision “Reducing the event of cerebrovascular and cardiovascular diseases caused by high blood pressure to Zero (Zero Events)” that we set in 2015 more important than ever. For realizing Zero Events, it is essential to carry out appropriate blood pressure management through early-stage detection and treatment of hypertension, as it is one of the main risk factors for strokes and heart attacks. As we advance toward this vision, OMRON has continued to produce devices that break new ground. A wearable watch-type blood pressure monitor, already with medical equipment certification, has been launched in North America, Japan, and Europe. Another device for North America release was a blood pressure monitor with ECG for simultaneous home monitoring of blood pressure and electrocardiogram data. Our endeavor, however, goes beyond the development of devices and our efforts to expand into telemedicine on a global stage already resulted in various new services that have been rolled out on a worldwide basis. In September 2020, OMRON launched the VitalSight remote patient monitoring (RPM) service in North America, followed by the Hypertension Plus, another remote monitoring service for hypertension, in the UK in April 2021.

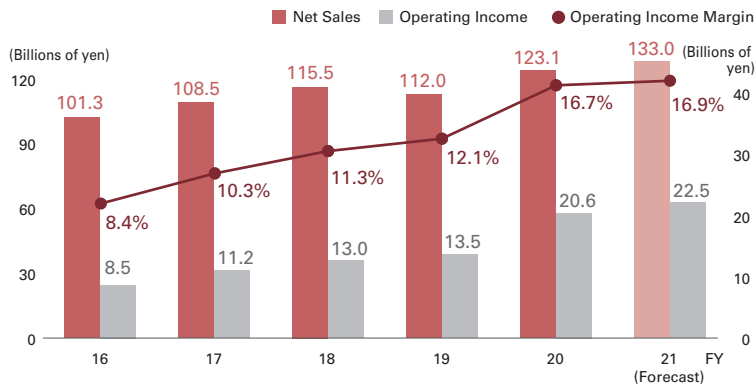
Even with the continuing impact of COVID-19, we see awareness of sustainability is growing with the response to SDGs and environmental preservation being examples. Our proactive action to achieve SDGs builds on efforts to promote the health of people around the world through our business growth and involves popularizing blood pressure monitoring at home. As we develop our innovative devices we also engage in environmentally responsible manufacturing. Specifics include reducing the use of plastic material by employing paper packaging and preserving paper resources by downsizing packaging. A carbon-neutral production line is also under consideration. Sustainability initiatives are promoted by reviewing our business activities from a wide-ranging perspective and include measures such as an environmentally friendly office achieved by using solar power.

We will continue to reinforce our fundamental business that is designed to deliver innovative devices to people around the world and assist their health management. We will also be entering new fields, such as creating personalized RPM services and AI technology for individually optimized blood pressure management and developing algorithms to

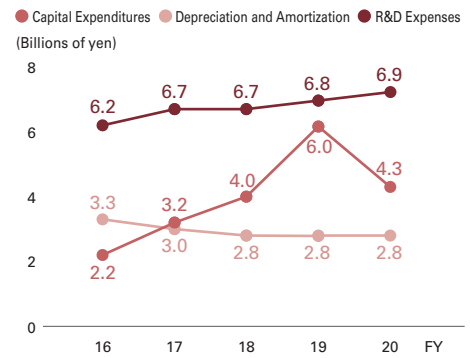
analyze warning signs of strokes and heart attacks. Our goal is being an indispensable partner to doctors and patients for the prevention and treatment of chronic diseases.

Business Highlights

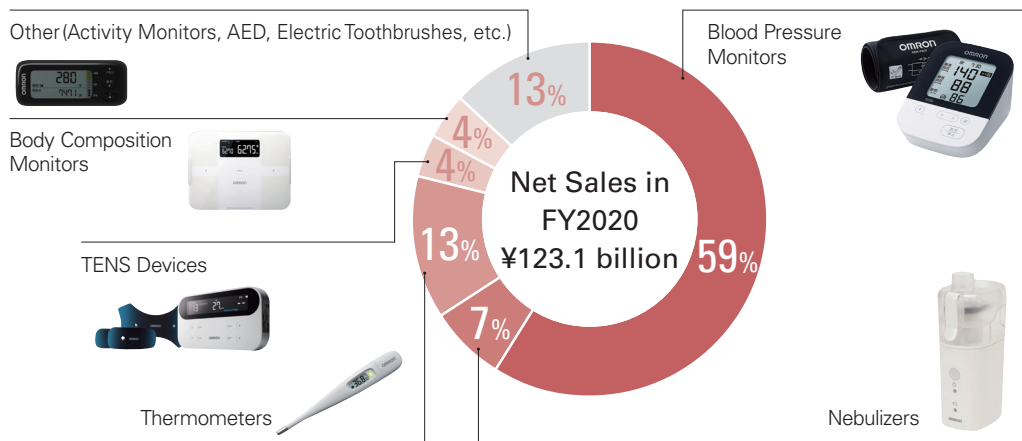
Net Sales / Operating Income / Operating Income Margin



Capital Expenditures / Depreciation and Amortization / R&D Expenses



Sales by Product



Social Issues to be Solved

- Increased events of cerebrovascular and cardiovascular diseases attributable to hypertension
- Worldwide prevalence of asthma attack and other respiratory disease exacerbations

VG2.0 Goals

- Blood pressure monitor sales: 25 million units/year
- Development of analytical technologies to continuously track blood pressure fluctuations
- Nebulizer and wheeze detector sales: 7.65 million units/year

Actual progress during VG2.0

INPUT

- Total R&D expenses: ¥27.2 billion
 - Total capital expenditures: ¥17.5 billion
 - Total growth investments: ¥9.8 billion
- (FY2017-FY2020 results)

OUTPUT

- Blood pressure monitor sales: 24 million units/year (FY2020)
- Nebulizer and wheeze detector sales: 3.41 million units/year (FY2020)
- Developed innovative devices such as a wearable blood pressure monitor, blood pressure monitor + ECG, and a wheeze detector.
- Launched remote patient monitoring services and corporate wellness services in North America, Europe, Singapore, India and Japan
- Established blood pressure monitor and nebulizer production bases in Brazil and Italy
- Set up an additional thermometer production line at the Matsusaka Factory to fulfill product supply responsibility in the COVID-19 situation

OUTCOME

- Helped to extend healthy lifespans and reduce medical expenditures to contribute to healthier and more comfortable lives for people around the world



SDGs 3.4.1

Introducing Case Studies

Transforming Medical Care to Reduce Cerebrovascular / Cardiovascular Diseases to Zero

Allowing anyone access to personalized hypertension treatment anywhere

Currently, work is underway to develop and promote RPM services as we aim to resolve common challenges around the world. Dealing with patients suffering from chronic diseases who are at risk of severe COVID-19 complications, preventing medical expenditures from soaring, reducing workloads for medical professionals, and easing burdens on patients visiting clinics are some of these challenges we face. We therefore concentrate on creating an environment that allows remote monitoring of patient conditions using innovative devices and information technology. We are also developing algorithms that support doctors for proper diagnosis and treatment. Collaborating more closely with our partners will help us create new solutions.

Hypertension Plus — Remote patient monitoring service for hypertension supporting medical care with medication recommended by using self-monitored blood pressure data

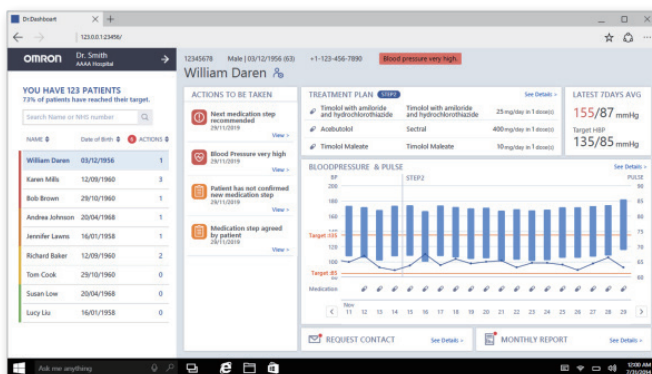
About 30% of all adults in the UK are reported to be suffering from hypertension. The National Health Service (NHS), a publicly funded health system administered by the UK government, has set a goal of achieving an 80% blood pressure control rate by 2030. As the latest control rate is estimated at 60%, more effort is called for. NHS patients access pre-registered general practitioners (GPs) except for emergencies. For GPs with busy practices, patients will have longer wait times that cut into consultation time. Reasons like these can make patients interrupt or even discontinue treatment. Therefore, enhancing treatment efficiency and supporting continuity of treatment will be the keys for hypertension management to improve in the UK.

In April 2021, OMRON launched Hypertension Plus, a remote patient monitoring service for hypertension, in the UK. This service generates a customized blood pressure management and medication plan for each patient using blood pressure readings taken at home to help enhance the efficiency of clinical practices.

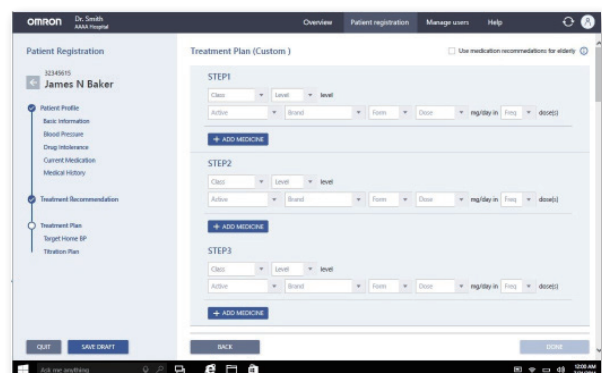
Using Hypertension Plus, a hypertensive patient can send self-measured blood pressure readings to the GP office's electronic medical record (EMR) system, enabling the doctor to trace the patient's blood pressure changes in detail on the management screen, connected to the EMR system. Hypertension Plus directly recommends a three-month medication plan that factors in patient attributes and blood pressure levels. It also determines whether medication needs to be changed based on post-medication blood pressure data and if needed, recommends a new personalized medication plan. Hypertension Plus was shaped by the TASMINE home blood pressure trials, a clinical study that proved the potential to reduce blood pressure through self-management and remote adjustment of medications, conducted at the University of Oxford. Recommendations are based on clinically proven medication titration techniques for hypertension, conforming to current National Institute for Health and Care Excellence (NICE) guidelines. These offer guidance for choosing antihypertensive drug treatment depending on patient age, ethnicity, and complications. Hypertension Plus allows the doctor to check each patient's conditions in detail within a limited time, using their consultation time more effectively by referring to the recommended medication plan.

Patients can have their medications modified from home, so hypertension care is uninterrupted and the need for a GP visit is less. Encouraged by clinical commissioning groups' (CCGs) decision to use the service, Hypertension Plus is currently being deployed at GPs across the UK.

Doctor's management screen

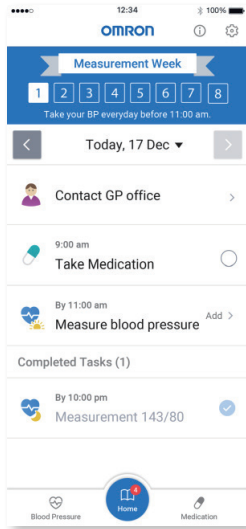


Blood pressure graph, data, etc. for each patient

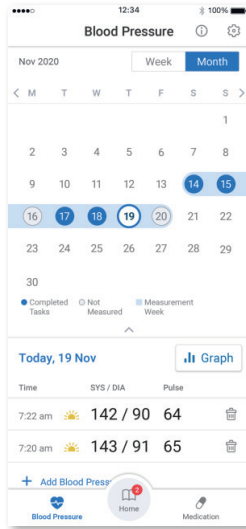


Patient's registered information and 3-month medication plan recommendation

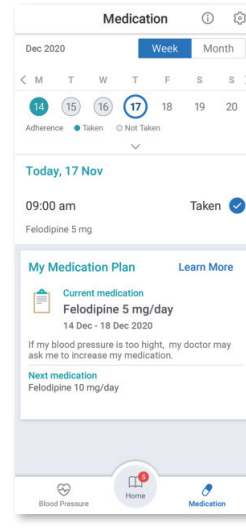
Patient’s smartphone app screen for patients



Daily blood pressure management schedule



Blood pressure management screen



Medication plan screen

Employee Comments

At the end of FY20 OMRON Healthcare Europe reached an important milestone in our Going for Zero vision, the launch of our first Remote Patient Management service for GP practices in the UK. Hypertension Plus is based on know-how from the TasminH4 Clinical Study, exclusively licensed from Oxford University, which demonstrated that remote patient management, including remote medication reviews, can lead to significant reductions blood pressure compared to usual office-led care.

Hypertension Plus is designed to improve health outcomes and reduce workload for GPs. Workflow algorithms help to streamline patient management, and the clinical dashboard is integrated with medical record systems, ensuring that decisions taken within the platform are recorded in the patient’s record.

The Hypertension Plus app support patients to manage their blood pressure from home. Medication plans are displayed in the app, with reminders to take medication and submit blood pressure readings. Dr’s decisions are shared with patients and educational content encourages health living. Throughout FY21 we will be expanding Hypertension Plus to more NHS customers in the UK. This is the start of an exciting journey that has the potential to transform the way that chronic diseases are managed in Primary Care.



Paul Stevens
OMRON Healthcare Europe Connected Services and Solutions Director

Comments from Partner

Covid-19 has highlighted more than ever the importance of managing cardiovascular risk factors particularly in target populations. Technologies such as Hypertension Plus can help primary care clinicians to appropriately target their workload so that they are using their skills most appropriately and able to support patients with the resources they need to manage their blood pressure.

Dr. Nav Chana
National PCH Clinical Director, National Association of Primary Care (NAPC)

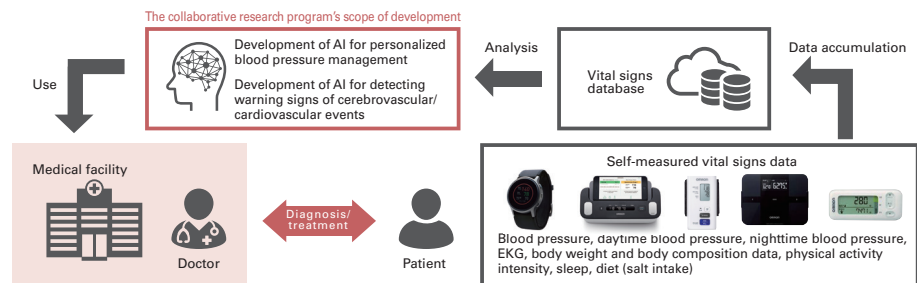
Collaborative research with Kyoto University harnessing AI and vital signs monitoring to realize Zero Events

Achieving zero cerebrovascular/cardiovascular events caused by high blood pressure requires appropriate blood pressure control for hypertensive patients, enabling them to maintain their blood pressure within a normal range. Approximately half the hypertensive patients undergoing treatment still have blood pressure beyond the normal range and study results indicate that even individuals with normal blood pressure readings may still have a possibility of developing serious cerebrovascular/cardiovascular diseases from blood pressure fluctuations. Such situations make early-stage detection of blood pressure changes essential to identify stroke and cardiac event warning signs.

OMRON, aware of these issues, partnered with Kyoto University to launch a research program called "Healthcare Medical AI" in June 2021 with the goal of exploring how the use of artificial intelligence (AI) can minimize the risk of cerebrovascular/cardiovascular events. Two study themes are focused on, the first on developing AI that will be able to generate personalized blood pressure management methods to support lifestyle improvements that help prevent hypertension and its progression. The second study aims to develop AI that enables the early detection of changes in blood pressure and other related vital signs self-measured at home to provide the risk identification.

Through developing these two AI technologies, we pursue effective blood pressure control and minimizing the incidence of cerebrovascular/cardiovascular diseases. To date, OMRON has developed the first-of-its-kind wearable blood pressure monitor with medical-grade measurement accuracy, as well as pursuing biometric information measurement technology to monitor body composition

data, physical activity intensity, and sleep in daily living conditions. Combining OMRON's measurement technology with Kyoto University's accumulated AI expertise creates a powerful resource that will allow us to develop OMRON-unique Healthcare and Medical AI.



Employee Comments

The prevalence of connected devices has facilitated accumulating cardiovascular disease-related health data such as blood pressure measured daily at home and lifestyle data. Using this data, OMRON Healthcare launched remote patient monitoring services in the U.S. and the UK. As we aim to differentiate OMRON from others with unique services, we initiated a collaborative research program on artificial intelligence (AI) using health and medical data. Two points make this research program stand out. Firstly, OMRON Healthcare commands the top share of the global home-use blood pressure monitor market, providing access to an immense quantity of high-quality data. Secondly, Kyoto University has many AI and medical specialists among its distinguished researchers. These points significantly contribute to the ability to create advanced AI that only the exceptional quality of our data makes possible, and that can be implemented in actual clinical workflows.

We are presently working on research with results to be published globally in a research paper.

From this starting point, we will expand collaborations with medical and research partners, as we continue to make progress toward zero cerebrovascular and cardiovascular events.



Development Center
Technology Development HQ
Core Technology Group

Hiroshi Koshimizu

Comments from Partner

Amid the pandemic of COVID-19 and the increasing risk of collapsing the healthcare systems, one of the urgent challenges is the development of medical systems outside of hospitals. This is directly associated with the issues, which we are going to face in the very near future, such as escalation of medical costs due to super-aged society and the decrease of healthcare professionals. To address these difficult issues together with OMRON Healthcare in this "Healthcare and Medical AI" collaborative research program, we would like to explore solutions of how to prevent the event risks to spend happier and healthier lives at home with a new type of healthcare system and AI studies.



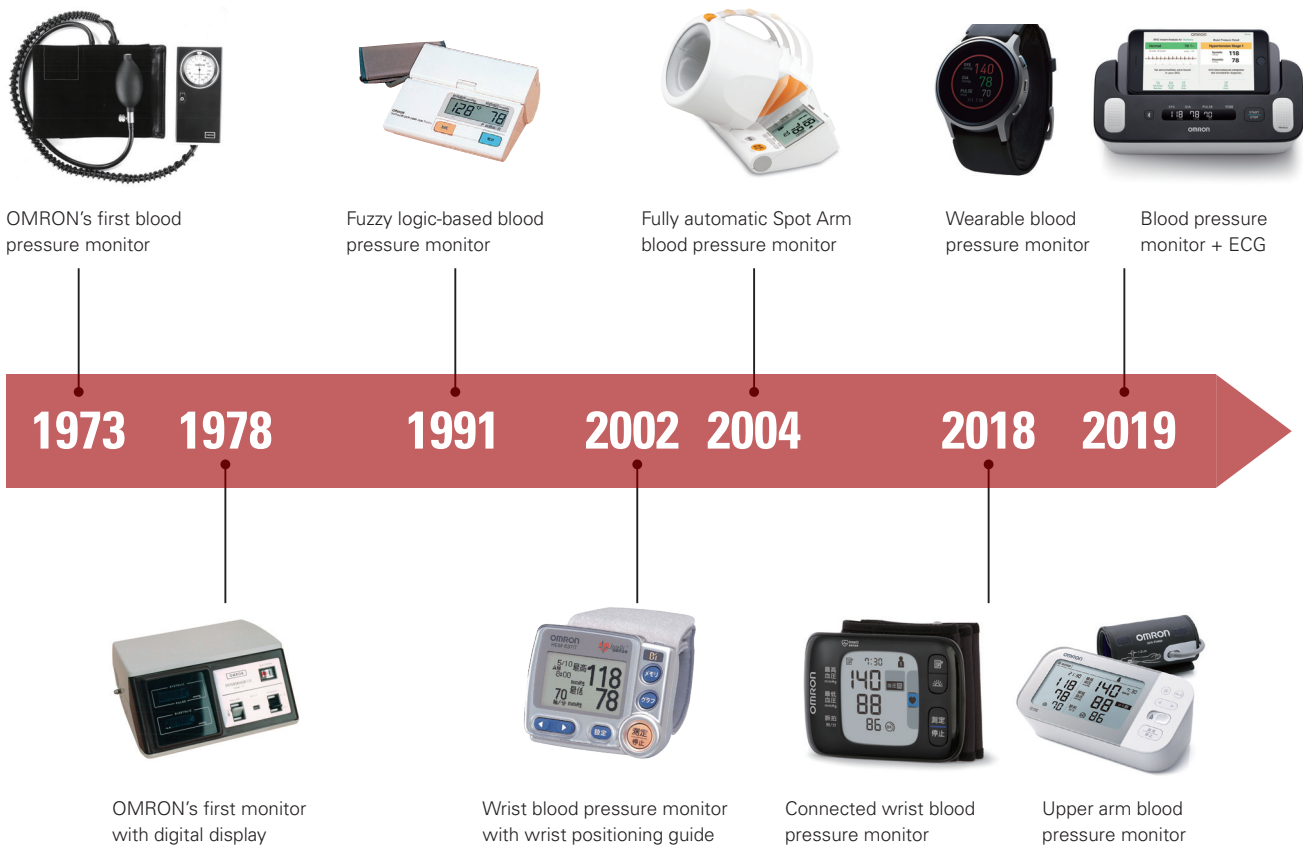
Kyoto University
Graduate School of Medicine
Department of Biomedical Data
Intelligence
Ph.D., Professor

Dr. Yasushi Okuno

Cumulative blood pressure monitor sales of 300 million units indicate a global prevalence of home blood pressure monitoring

The year 2021 will see global sales of OMRON home-use blood pressure monitors reach the 300 million mark. It is almost 50 years since OMRON launched its first home-use blood pressure monitor in 1973. At the time, common thinking was that blood pressure could only be measured at a medical facility, so the concept of home blood pressure monitoring was not accepted by consumers or medical professionals. But even so, we were confident in our belief that self-measured blood pressure should help promote people’s health, so OMRON ceaselessly worked to raise awareness of the public and medical community regarding the importance of home blood pressure monitoring. At the same time, we were pursuing the usability that would enable anyone to easily obtain accurate readings with medical-grade measurement accuracy. To make home blood pressure monitoring more accepted, we cooperated with medical professionals and experts, participating in numerous clinical studies to confirm efficacy. In 2014, some 40 years after launching our first monitor, our persistent efforts bore fruit. The 2014 Guidelines for the Management of Hypertension recommended that home blood pressure readings take priority in diagnosis data over doctor office-taken blood pressure readings, recognizing the efficacy of home blood pressure monitoring. With this, home blood pressure has been regarded as appropriate criteria for hypertension diagnosis in Japan as well as worldwide. From the release of its first blood pressure monitor it had been about 30 years before OMRON achieved cumulative global sales of 100 million units in 2009. But the next milestone of 200 million was reached in seven years, and in just five years after that, OMRON blood pressure monitors are set to achieve 300 million units in global sales, indicating home blood pressure monitoring becoming prevalent at an accelerated pace. Along with the recent rise of lifestyle disease patients, the practice of monitoring blood pressure at home is also growing in emerging nations. COVID-19 has also played a part in raising people’s health awareness, helping our global monitor sales to achieve a year-on-year increase of 20% in fiscal 2020. We will remain committed to delivering innovative and high-quality products to hypertensive and other individuals who need a blood pressure monitor. At the same time, we will expedite the roll-out of RPM services and the development of AI technology supporting hypertension treatment as we continue our progress toward achieving Zero Events.

History of blood pressure monitor development in line with home blood pressure monitoring acceptance



Innovation Exploring Initiative HQ (IXI)

Corresponding SDGs



The Innovation Exploring Initiative HQ (IXI) aims for creation of new businesses by designing near future to solve social issues, and planning and implementing the necessary strategies to realize it. We contribute to realization of better society by pioneering new business opportunities as the company-wide innovation platform, and creating social needs with new businesses created by innovating business models.



Executive Officer
Senior General Manager of Innovation
Exploring Initiative HQ

Hidetaka Ishihara

Making a Model for Creating New Businesses that Solve Social Issues

OMRON has been banding together across the entire company to strive for “ambidextrous management” as a way to build up the power to achieve self-driven growth. IXI plays a role for it with its mission “Seeking and establishing new businesses.” In order to develop new businesses and improve reproduction as OMRON’s innovation platform for the entire company, we are focusing on planning strategies that create back-casting innovation starting from the near future designs, building dedicated groups for business verification and accumulating knowledge. We have implemented over 20 projects since our establishment three years ago, and four themes are currently proceeding to business verification phase. Also, in fiscal 2020, we have built the Integrated Innovation Process as a model of business creation. In this process, verification points and judgment criteria are clarified that tend to be personal and vague for new businesses, and

quality of themes and implementation speeds have improved significantly. Additionally, we have been working on strengthening and training human resource for architect and business creation who can promote business development, through this process. We have established a human resource development method that allows a high-quality “trial and learning” approach by defining required skills for each job type and giving detailed feedbacks through the on-the-job training in projects.

Creating New Businesses to Drive Growth and Accelerating the Social Implementations

In the time of new normal, society drastically changes globally, causing various social issues. On the other hand, for OMRON with the corporate philosophy to solve social issues through its business, this is a time full of business opportunities, so we will work on catching those opportunities for new businesses.

Seeking business opportunities does not mean randomly looking for an unknown area. With all the various business opportunities available, we strategically need to select target areas and maximize investment efficiency. OMRON has been proceeding businesses with a focus on three domains: factory automation, healthcare, and social solutions. We will continue to create businesses with these three axes, proactively responding to social issues that could not be covered in each domain.

In determining the direction of new businesses, we focus on two main approaches. The first approach is business expansion from an essential value perspective. In this approach, we utilize customer assets that our business divisions have ever built, re-define our value by recognizing new social issues, and expand our business by advancing business models. The second approach is expansion into new business areas in our domain. By proactively promoting collaborative creation with customers regarding the four growth opportunities that OMRON recognizes for next long-term vision – “rising sophistication of manufacturing,” “automation of primary & tertiary industries,” “preventative medical support,” and “energy solutions to achieve carbon neutral” – we will powerfully promote the creation of new value and implementation in society, while obtaining the business assets that OMRON does not have.

Over the course of three years since IXI’s establishment, we have built OMRON-specific model process for business creation and many external people have joined this, agreeing with OMRON’s approaches and the direction of business creation. We are also internally training ambitious human resource for architect and business creators, through many projects. Our goal to “reproduce the founder’s philosophy and capability as a company” is surely being achieved. We are completely warmed up to fulfil the next long-term vision. From fiscal 2021, we will definitely shift to the goal of

creating businesses to drive OMRON's growth, focusing more on speedy businesses implementation in society and accelerating business creation.

Examples of New Business Creation to Solve Social Issues

Promoting Agri-automation Business in Which People Can Flourish

Social Issues to be Solved

In recent years, agriculture in China is experiencing serious lack of labor force, and it has become a social issue how to continue the farming. At the same time, demand is increasing for vegetables and fruit grown with low or no pesticides as customers become more conscious of food safety and security. Under these situations, the number of skilled worker who can produce crops with low or no pesticides is limited, and there is a need to realize high-quality, stable agriculture that does not depend on human skills.

Effort for Social Implementation

OMRON has developed services that support human judgment in their work by analyzing cultivation conditions, such as growth of crops, temperature, humidity and daylight hours, instead of whole automation that requires large capital expenditure. These services are now being tested in the field in China. In these services, as the crops growth state is timely quantified and the use of pesticides and chemical fertilizers are controlled to be minimal, anyone can work on production at the same level as those of skilled workers, which contributes to solving lack of labor force. In May 2020, we started up the cultivation technology development base in China, accelerating developments to make it a new business. With experimental farms further expanded, business creation is proceeded with partnerships between Japan and China.



Data Utilization Support Business to Effectively Help Digital Transformation in Manufacturing

Social Issues to be Solved

With the advanced digital technology, we are now able to obtain large amount of data through sensors at various places including manufacturing sites. Customers in manufacturing industry expect that they can utilize the various data for creation of new value in quality improvement, new product development, and collaborative creation projects by multiple companies. On the other hand, it takes a lot of manpower and time to digitalize on-site documents and extract necessary information from large amount of data to analyze it. It is required to facilitate efficient data use and sharing for various purposes.

Effort for Social Implementation

OMRON extracts and processes necessary data from large amount of data collected from manufacturing sites, and verifies solution value for creative work, such as planning quality improvement and production or developing new products and services. At our Group's production sites, we automatically summarized production control data of parts handled at multiple locations and significantly improved work efficiency, such as converting the data into a suitable form for production planning. With these achievements, we now have started suggesting introduction of data utilization support business for customers who are in need of production of multiple products or in variable volume production, such as automotive parts, digital parts or cosmetics. With lack of labor force in the manufacturing industry becoming more serious, we will support customers' DX effort by enabling more people to engage in work with high added value.



Elderly Care Support Business Aimed for Extension of Healthy Life Expectancy (Japan) Social Issues to be Solved

Ultra aging society that Japan will experience first in the world will afford a huge opportunity for OMRON to create new businesses. While the number of care givers are shorted for the elderly in needs of long-term care, it is the social challenge to extend healthy life expectancy where people can make livings independently.

Effort for Social Implementation

About half of people who need light nursing only have physical and mental functional deterioration due to their living style that is not active, and this can be prevented or improved. It is essential for extending health expectancy to promote preventing long-term care by "self-reliance support," which helps those people recover physical and mental functions to make their daily lives or join social activities. Therefore, OMRON has developed a system to support promotion of self-reliance that can be utilized further, by codifying know-how of experts who support self-reliance. Currently, we are in a partnership with Oita Prefecture, which is proactively supporting the elderly for self reliance and preventing care need level deterioration and are verifying systems at nursing care facilities in the prefecture. At nursing sites, communication is very important to grasp care receivers' conditions that vary on individuals. Therefore, this system is designed to decrease work load with machine supporting daily works so that people can concentrate on creative works such as having communication. By allowing anyone to give support for self-reliance at the same level of experts, we will provide new values with which employees at nursing sites can play more important roles.



Comments from Partner

In Oita Prefecture, we are working on building the community-based integrated care system with the policy goal of "building a society of healthy longevity and lifelong activity. We have been focusing on promoting self-reliance and preventing deterioration of care need levels for the elderly, such as holding community care meetings, which is a leading move in Japan. Within the prefecture, the short-term intensive prevention service is spreading (which works on improving the elderly's physical functions with rehabilitation experts, etc. in a short period aiming for improvement of the quality of the elderly's living function such as meals and baths), while it is required to build a system that allows the elderly in need of support to receive the service. To solve this issue, we as the prefecture have agreed with OMRON to promote cooperative business utilizing ICT systems. We are working on improving the quality and efficiency of nursing and preventive long-term care by utilizing and analyzing collected data, along with promoting self-reliance of the elderly in regions. Also, through our approaches, we plan to assess and verify the effect of general supporting business for nursing and daily livings, including our short-term concentrated prevention service.



Senior Staff, Community-based Integrated Care Promotion Group
Welfare for the Aged Division
Welfare and Health Department
Oita Prefecture

Hikaru Ogasawara

Employee Comments

Feeling My Own Growth through Business Creation Process

With my strong will to narrow the gap between the average life span and health expectancy by supporting self reliance for the elderly, I joined IXI from a different business division in 2019 and am now the project leader of elderly care support business. In IXI, you can obtain skills that are necessary to create businesses proceeding projects steadily, with the vision to solve social issues as an axis. I only had experience of technology or products developments as an engineer when I joined the division, but I formed a team with those who had various experience and have been proceeding projects based on integrated innovation process. Through promoting projects, I was able to not only accumulate know-how to create new businesses but also recognize my own strength as an engineer to "change technology into value." After starting with four members, this project has become a business department in fiscal 2021 which makes me feel that we are making this a business steadily. With the large field of Oita Prefecture, we aim for supporting the elderly in Oita first, by verifying the effects with parties from the Prefectural Office and across the Prefecture. Further, we aim to contribute to the society by focusing on the social implementation of our system as an eco system that supports people's health, in partnerships with more companies and municipalities.



Elderly Care Business
Department
Business Incubation
Center

Yuki Kato

Propelling Collaborative Creation toward New Businesses

To accelerate implementation of new businesses in society, it is important to overcome the “Not Invented Here Syndrome” and create collaboratively with the startups developing cutting-edge technologies and business models by open innovation. In particular, for new business development or areas where innovation of business models is needed, who you have partnerships with is the key. To deepen key cooperation with partners, OMRON VENTURES CO., LTD. (OVC) proactively promotes strategic investments and expands the network to connect to advanced startups.



President and CEO
OMRON VENTURES CO., LTD.
and
General Manager
Co-Innovation Design Center
Innovation Exploring Initiative H.Q.

Tomoko Inoue

In seven years since its establishment, OVC has invested in 17 startups and has been building relationships with venture capital firms in the center of the world's innovation eco system. In fiscal 2018, OVC started to accelerate investments for startups in Israel and Silicon Valley where world-leading high-technology startups emerge, nurturing businesses and technologies. To invest in foreign companies, it is important to build connections by getting involved in networks of foreign investors. There are many entrepreneurs who work on solving social issues by innovative technologies and business ideas, and many successful entrepreneurs establish venture capital firms to support newcomers. Therefore, excellent entrepreneurs gather at world-famous venture capital firms, creating many innovations. OVC focuses on the eco system of these innovations and increases the chance to meet excellent ventures to conduct optimal investments by combining relationships with entrepreneurs and networks with venture capital firms. Moreover, with the customers and technology assets obtained from these investments, OVC aims to create more social needs through collaborative creation with IXI and other businesses of OMRON.

■ OVC Investment Track Record

May 2015: Plant Life Systems Co., Ltd.	Nov. 2018: Connected Signals, Inc.
Jun. 2015: 3D Media Co., Ltd.	May 2019: Theranica Bio-Electronics Ltd.
Jul. 2015: Organic nico Co., Ltd.	Jun. 2019: Patients Know Best Limited
Mar. 2016: Life Robotics Inc.	Oct. 2019: Realtime Robotics, Inc.
Oct. 2016: Exvission Corporation	Mar. 2020: Avails Medical, Inc.
May 2017: Vegitalia Inc.	Mar. 2020: AIRx Health Inc.
Jun. 2017: Lark Technologies Inc.	Mar. 2021: DIMAAG-AI, Inc.
Dec. 2017: mofiria Corporation	Jul. 2021: Terrals Technologies Pvt. Ltd.
Oct. 2018: De-Identification Ltd. (D-ID)	

Example of Collaborative Creation Projects with Investees

Patients Know Best Limited (PKB) (U.K.)

PKB provides platforms to share patients' medical data. Electrical medical records are common in U.K., but they are not shared among hospitals. Thus, it was causing physical and financial burden for patients as they needed to repeat check-ups every time they change hospitals to visit. Also, there were other social issues such as optimization of public medical expenses. For this situation, PKB has built a medical data sharing system with high security, which patients are authorized to administrate. This enabled not only to share medical data among hospitals but also for patients to administrate own medical data. Currently, OMRON Healthcare Europe is working on connecting its health care app “OMRON Connect” and PKB's system so that patients with chronic diseases can share their home data measured with OMRON's devices with hospitals and improve efficiency of treatments.

DIMAAG-AI, Inc. (U.S.)

DIMAAG-AI provides solutions utilizing AI that can explain the estimate results, such as failure detection or machine failure estimate. It aims for renovating manufacturing processes with human, and the comprehensive system buildings such as generation of AI model and re-learning after operation with data visualization in inspection area show their characteristics. While inspections by human are more difficult than before due to lack of labor force or COVID-19 crisis, the social issue is how to inherit experienced workers' skills. The Inspection Systems Business Division at IAB works on introduction of AI for substrate visual inspection system and X-ray inspection system in order to support customers' high-quality manufacturing processes. With the synergy effect of collaborative creation with DIMAAG-AI, we are working on realization of unmanned inspection system by introducing AI-based technologies for various scenes related to inspection operation.