

Implementing “i³-Mechatronics” and Driving Evolution with AI Robotics

Since 2017, Yaskawa has promoted “i³-Mechatronics,” a concept that integrates and manages cell-level automation powered by industrial robots, servo motors, and AC drives through digital data. During the previous mid-term business plan period, we strengthened product development and proposal activities based on this concept, resulting in broader customer adoption and a deeper understanding of the value of “i³-Mechatronics.” We have also implemented the concept in our own factories, improving productivity and quality. In FY2026, Robot Plant No. 5 in Kitakyushu, Japan, an integrated production facility for servo motors and industrial robots, commenced operations as a key manufacturing site.

Under the new mid-term business plan, “Dash 35,” we will expand the application of “i³-Mechatronics” through the development of the Physical AI market and its implementation in society. By accelerating the deployment of AI robot “MOTOMAN NEXT” and developing next-generation actuators, we aim to further advance “i³-Mechatronics” and realize manufacturing in which people and machines collaborate seamlessly.

i³-Mechatronics in practice

[▶ Customer sites](#)

Next-generation manufacturing powered by data
Takara standard’s challenge to transform its artificial marble countertop production line

Tomonori Saito
 Executive Officer
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 Takara standard Co., Ltd.



At its Kashima Plant, Takara standard is transforming its artificial marble countertop*¹ production line by leveraging Yaskawa’s “i³-Mechatronics” concept. By combining AGV-based transport, cell production, and robot control utilizing 3D cameras, the company is building a next-generation production line capable of flexibly responding to diverse product specifications.

Our strength has always been our ability to deliver products tailored to the needs of each customer. Artificial marble countertops require flexibility to accommodate a wide range of dimensions and specifications. At the same time, many production processes relied heavily on manual operations, making automation and labor savings key challenges.

The origin of this project can be traced back to an earlier initiative to automate the dowel insertion process*² on a wooden cabinet assembly line. At the time, having robots determine machining operations based on camera-acquired data was an ambitious challenge. Through that experience, we developed a new approach: instead of changing setup conditions or teaching data for each product, production could be managed more flexibly through the use of data.

Building on that experience, we developed the concept for the new artificial marble countertop line. The line employs AGV-based transport and a cell production system, while equipment and robots are integrated and controlled using recipe data received from upper-level systems. In addition, 3D cameras identify the position and dimensions of each workpiece and provide data for machining operations. By utilizing camera technology, we have significantly reduced the time required for positioning and setup changes.

Implementing new technologies in an actual production environment presented challenges. However, the experience gained through the automation of the dowel insertion process enabled us to move forward while sharing past lessons learned and addressing potential concerns. In previous

projects, improvements were often made after implementation through ongoing discussions. This time, extensive verification was conducted during the planning stage, resulting in a more reliable launch. Our long-standing collaboration with Yaskawa was a key factor supporting the success of this project.

The greatest benefit we expect from this initiative is improved profitability. In addition to labor savings, we believe it will enhance overall manufacturing competitiveness through higher quality, greater productivity, shorter lead times, and stronger capabilities for handling a wide variety of products. Looking ahead, we will further expand the use of data generated from equipment and production processes to optimize and automate manufacturing operations. Our goal is to realize a dark factory*³ powered by Physical AI. By utilizing the data accumulated through this production line, we aim to evolve toward manufacturing systems capable of anomaly prediction and autonomous corrective decision-making. Through this approach, we hope to realize next-generation

manufacturing in which equipment, robots, and people are connected through data.

***1 Artificial marble countertop**

Countertops used in kitchens, washstands, and similar applications. Made primarily from resin-based materials, they offer excellent design flexibility, water resistance, and ease of maintenance.

***2 Dowel insertion process**

A process used in the assembly of wooden cabinets and similar products in which cylindrical connectors (dowels) are inserted and assembled to join components.

***3 Dark factory**

A highly automated factory concept in which production equipment operates autonomously without the need for on-site personnel. The term refers to a factory that can function with little or no lighting due to its high degree of automation.

i³-Mechatronics in practice

▶ Yaskawa facilities

Robot Plant No. 5 Realizing manufacturing innovation through “i³-Mechatronics”

Masakazu Yasuno

Associate Director
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Robotics Div.



Robot Plant No. 5 is a next-generation factory that redefines conventional manufacturing and embodies Yaskawa's solution concept, “i³-Mechatronics.” Planning for the facility began in 2021 to address challenges such as limitations on automation and process improvements imposed by existing plant layouts, inefficiencies in servo motor procurement, and aging production facilities. Through extensive study, we envisioned a production system capable of operating effectively regardless of fluctuations in demand and other external factors. As a platform centered on automation and data integration, the plant commenced full-scale operations in July 2026.

Robot Plant No. 5 features four key characteristics. First, industrial robots and the servo motors used in those robots are produced at a single site, enabling close collaboration among design and development, operations, procurement, production engineering, and manufacturing functions. This integrated approach optimizes both products and production processes. Second,

the plant enhances productivity by expanding the scope of automation through the use of Yaskawa's own robots, servo systems, and controllers throughout manufacturing operations. Third, the plant has replaced conventional line production with a distributed cell production system*¹. Because multiple cells can operate flexibly and independently, production can continue even when demand, product mix, staffing levels, or equipment conditions change. This approach enables both stable equipment utilization and flexible high-mix, variable-volume production.



Conventional line production system



New distributed cell production system

Fourth, with “YASKAWA Cockpit (YCP*2)” and the “YRM Controller*3” at its core, the plant integrates time-series data collected from production equipment and connects data across design, manufacturing, and individual components. This enables enhanced traceability and continuous quality improvement. In addition, Robot Plant No. 5 has introduced the autonomous AI robot “MOTOMAN NEXT.” In screw-fastening operations, for example, the robot can detect errors



Autonomous AI robot “MOTOMAN NEXT (NHC12)” performing screw-fastening operations

and automatically retry tasks, improving first-pass yield while minimizing human intervention. By applying “MOTOMAN NEXT” to processes that were difficult to automate with conventional robots, we are further reducing labor requirements and improving quality consistency.

Through these initiatives, Robot Plant No. 5 achieves both high productivity and high quality. At the same time, it serves as a showcase factory, where visitors can experience the practical implementation of “i³-Mechatronics” firsthand. Customer visits help deepen understanding of new manufacturing approaches and the value of Yaskawa’s products and solutions. Going forward, we will further advance automation and data utilization and extend these capabilities to development, sales, and service activities. Through the continued implementation of “i³-Mechatronics,” we will accelerate profitability improvements and strengthen our business competitiveness.

*1 Distributed cell production system: A production method consisting of multiple independent cells capable of performing the same tasks, allowing a single cell to handle multiple product models.

*2 YASKAWA Cockpit (YCP): A software platform that collects, stores, visualizes, and analyzes real-time operational data from production equipment and facilities.

*3 YRM Controller: A controller that centrally manages production cells consisting of robots and peripheral equipment, enabling high-mix, variable-volume production and automation through IoT integration.

Yaskawa Group’s physical AI market strategy

[Overview](#)



Expanding the possibilities of automation through AI robotics from the field

Masahiro Ogawa

Vice Chairman, Executive Officer,
Responsible for AI Robotics Business and
New Mechatronics Applications Business

AI as a driver of “i³-Mechatronics” evolution

Yaskawa Group’s i³-Mechatronics concept, promoted since 2017, has focused on generating data through motion technologies, turning those data into insights, and driving continuous improvement. This concept remains unchanged with the advent of AI. We view AI as a breakthrough that expands data-generating workplaces and deepens data understanding. By combining AI with our motion control and robotics technologies, ideas once beyond reach are becoming practical solutions. In this sense, AI is the technology that advances “i³-Mechatronics” to its next stage and expands the scope of automation.

Toward a world where robots can perform tasks once reserved for humans

Customers expect robots to do more than reduce labor. Aging populations and labor shortages are pushing human-dependent social infrastructure to its limits. Society increasingly needs robots to take on tasks long considered achievable only by people. The key to this is AI-driven robot autonomy. Conventional industrial robots achieve high productivity by repeating predefined motions on objects in fixed positions. However, in applications such as infrastructure inspection, medical instrument sterilization, and crop harvesting, object conditions

and environments constantly vary. To perform such tasks, robots must perceive their surroundings, make decisions, and autonomously generate optimal actions. Because these unstructured tasks still rely heavily on human labor, we believe AI robotics has the potential to match or exceed the automotive market that has long driven robot demand. To capture this opportunity, high-value AI robotics solutions must be established and deployed. At Yaskawa, the autonomous AI robot “MOTOMAN NEXT” is at the core of this strategy.

Robots in the workplace further advance AI

Foundation AI technologies, including generative AI, image recognition, VLM*¹, and VLA*², are evolving rapidly. At the same time, AI requires real-world data to create value. The data needed to advance physical AI exist in environments where things move, people work, and conditions change, such as factories, farms, healthcare facilities, and public infrastructure. Our role is to put AI into practical use at the edge. Working with leading AI platform providers, we are deploying robots in real-world applications and accumulating operational data. These data enhance AI capabilities, while the resulting insights improve motion performance and expand edge applications. Building this cycle is the foundation of our physical AI strategy.

Market expansion and future potential of physical AI

Since its launch in December 2023, “MOTOMAN NEXT” has been validated in more than 200 use cases, some of which are already operating on customer production lines. While we hope to see broader adoption, these results are encouraging for this early stage of physical AI market development.

Deploying “MOTOMAN NEXT” requires capital investment and involves downtime risks, adjustment costs, and ROI*³ considerations.

Customers carefully assess whether it can be applied to their processes and deliver sufficient returns. Expanding too quickly could undermine confidence in the market itself. As a leader in AI robotics, we are addressing technical challenges and customer concerns while demonstrating the value of “MOTOMAN NEXT” and advancing the deployment of physical AI.

A key point behind these 200 deployments is that each represents a different customer project. Through them, we have identified automation needs common

across industries. Over the past two years, discussions with a wide range of companies have revealed shared challenges in tasks such as picking, storing, and packaging materials and products. Our growth strategy is to transform successful project-specific applications into broadly applicable solutions and deploy them across multiple industries. We will focus first on common processes and expand deployment through automation packages combining “MOTOMAN NEXT” with peripheral equipment.

Successful deployment requires more than “MOTOMAN NEXT” itself. It also requires understanding customers’ processes and integrating solutions with peripheral equipment and existing equipment. To strengthen execution capabilities, we are deepening collaboration with Slers*⁴ and equipment manufacturers. Equipment manufacturers have long been focused on how to enhance and reduce manual work within the processes their equipment supports. “MOTOMAN NEXT” offers a new solution to these challenges. We are already working with multiple partners, and collaboration continues to expand with companies that view previously difficult-to-automate areas as new business opportunities.

Our strategy is not to sell “MOTOMAN NEXT” as a product, but to offer solutions that automate specific tasks. This makes it easier for customers across industries facing similar challenges to evaluate potential applications. By building a track record of successfully automated tasks, we can reduce technical and psychological barriers to adoption while building confidence and trust in “MOTOMAN NEXT” across the market. We believe these efforts will be critical to accelerating future adoption.

Advancing work capabilities with humanoids in mind

As noted earlier, expanding real-world robotic applications is important not only for our growth but also for the advancement of physical AI. “MOTOMAN NEXT” is an important first step, and humanoids are another promising option. Humanoids must be able to move to worksites, recognize objects, and respond appropriately to changing situations. Achieving this requires not only the AI-driven decision-making capabilities featured in “MOTOMAN NEXT,” but also advanced actuator-based work and mobility performance. In particular, humanoids must simultaneously achieve battery operation, lightweight and compact design, multi-axis control, and high-quality motion. This requires designing motors and actuators based on desired robot performance, rather than developing motors first and integrating them into

robots. To gain the expertise needed for this shift and accelerate new design approaches, we acquired Tokyo Robotics Inc. in 2025. While commercialization of humanoid motors and actuators may become a future opportunity, our current focus is on developing motors, actuators, and humanoids capable of performing a wide range of tasks. Through these efforts, we aim to establish new design principles and a strong technology foundation.

- *1 VLM (Vision-Language Model): An AI model that understands images and text jointly and learns the relationships between them.
- *2 VLA (Vision-Language-Action): An AI model that combines VLM capabilities with robot action-generation functions.
- *3 ROI (Return on Investment): A metric that measures profit generated relative to investment.
- *4 Sler (System Integrator): A company that integrates systems and equipment tailored to customer operations and supports implementation and operation. Yaskawa collaborates with Slers across a wide range of fields to deliver automation solutions.



Yaskawa Group's physical AI market strategy

▶ Deployment of AI robot "MOTOMAN NEXT"

**Redefining what can be automated:
A challenge by Tanabe Engineering Corporation and the Yaskawa Group**

Takashi Obunai Department Manager Mechatronics Sales Department Tanabe Engineering Corporation Kei Koba Department Manager Product Development Department Tanabe Engineering Corporation	Tosuke Tamagawa Manager Product Development Department Tanabe Engineering Corporation Ayame Oshiro Mechatronics sales division1 Mechatronics sales department Tanabe Engineering Corporation
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Tanabe Engineering Corporation, a system integrator (Sler) specializing in plant construction and maintenance, also provides automation and labor-saving solutions for the chemical, pharmaceutical, fine chemical, and semiconductor industries. The company has long leveraged Yaskawa Group robotics technologies and has been automating powder-weighing operations with the AI robot "MOTOMAN NEXT" since 2025.

Transforming R&D and quality testing through automated powder weighing

Since around 2015, we have worked for pharmaceutical manufacturers to automate laboratory operations and powder weighing using Yaskawa Group dual-arm robots. While

automation is already widespread in the pharmaceutical industry, many quality testing and R&D processes still rely on manual work. Human involvement can cause variations and limit development speed due to manual management. Automating powder weighing is therefore a key step toward

fully automated processes and has attracted strong customer interest. However, because the task requires continuous adjustment based on container shapes and powder conditions, conventional teach-and-playback*¹ robots were unable to provide a practical solution.

The development platform unique to “MOTOMAN NEXT”

We chose “MOTOMAN NEXT” for automated powder weighing because it can accurately convert information captured by its 3D vision system into robot motion coordinates. In powder weighing, AI must determine how and where to scoop based on the condition of the powder and its position in the container. This requires converting image coordinates into robot coordinates, a process known as hand-eye calibration*², which is typically one of the most complex and time-consuming aspects of development. Because this capability is already built into “MOTOMAN NEXT,” Slers do not need to develop it from scratch. The broad technological foundation provided by Yaskawa Group also gives customers greater confidence in system performance and reliability.

Combining different expertise to unlock the potential of “MOTOMAN NEXT”

To maximize the value of “MOTOMAN NEXT,” it is important to clearly define the strengths of AI, robotics, and machine control, and understand how they complement one another. Although “MOTOMAN NEXT” is a highly promising platform that combines AI and robotics, AI alone cannot solve every challenge. Even if AI determines the optimal action, that action may not be feasible due to the shape of the tool, the robot’s range of motion, or safety constraints. To turn AI decisions into actual robot actions, physical constraints must be addressed through mechanical design and control engineering. This presents a new challenge for Slers. Traditionally, mechanical engineers designed shapes, angles, and mechanisms and optimized physical motion, while IT and AI engineers focused on perception and decision-making based on data. These fields evolved separately. However, successful deployment of “MOTOMAN NEXT” requires expertise from both. Having personnel who understand both domains has been a major advantage for Tanabe Engineering. In addition,

Yaskawa Group’s support in robotics and IT-related problem solving has greatly accelerated development. As Slers identify on-site challenges and Yaskawa provides the robotics platform, together, we are exploring the boundary between AI and mechanical engineering to expand the adoption of “MOTOMAN NEXT.”

Expanding automation into previously unautomated areas starting with powder weighing

The success of this powder-weighing solution lies in demonstrating a practical way to automate tasks long considered impossible to automate through the combination of robotics and AI. Powder weighing is a common process across industries such as chemicals, pharmaceuticals, and food, giving the solution broad market potential. With this first application now established, we have gained a clearer understanding of both the areas already within reach and those requiring further development. For customers, this also serves as an opportunity to reconsider processes they had previously viewed as unsuitable for automation and recognize new possibilities. We believe this represents an important step toward expanding the market.

Expanding “MOTOMAN NEXT” into a robotics platform

We see “MOTOMAN NEXT” as a future robotics platform for the era of physical AI. It sits at the intersection of the FA world, where safety and quality are paramount, and the IT world, which advances through open environments and rapid trial and error. Going forward, differentiation will depend on how Yaskawa defines the boundary between guaranteed functionality and areas open to Sler development. The advancement of physical AI also requires a framework for securely collecting and utilizing operational and behavioral data generated in the field. If Yaskawa, as a platform provider, establishes a development-friendly environment and data infrastructure for Slers, solutions built on “MOTOMAN NEXT” will continue to expand. As a partner, we look forward to continuing to realize the potential of “MOTOMAN NEXT” together.

*1 Teach-and-playback:

A technique in which an operator manually teaches a robot arm the desired motions, which the robot then automatically reproduces.

*2 Hand-eye calibration:

Measurement and adjustment used to determine the precise positional and orientation relationship between a robot hand and a camera.

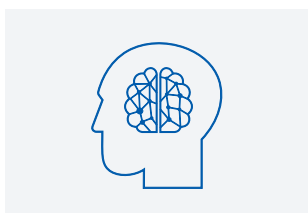
Automated powder-weighing process using AI

Capture 3D images with a vision camera



Acquire depth images with a vision camera

Analyze with AI to identify the optimal scooping point



Determine the optimal scooping position using depth images and scooping volume data

Collision check and motion generation for the target position



Utilize “MOTOMAN NEXT” path planning

Execute scooping operation



Yaskawa Group's physical AI market strategy

▶ A case study in the humanoid market

The future of humanoids envisioned by the Yaskawa Group

Yoshihiro Sakamoto

President and Representative Director
Tokyo Robotics Inc.



Tokyo Robotics Inc. is a venture company engaged in the development, manufacturing, and sales of humanoid robots. It joined the Yaskawa Group in 2025 and plays a central role in the Group's efforts to pioneer the humanoid market as part of its strategy to expand the physical AI market.

A growing market driven by diverse players

Today, humanoids are being used for assembly work in smartphone factories and material handling in warehouses. However, their productivity remains limited, and both their operating speed and range of tasks are still constrained. Despite this, adoption is beginning to accelerate, particularly in the United States and China, where more companies are willing to explore their use if they can deliver a reasonable return. As the market is still in its early stages, no single direction has yet emerged. Various players are pursuing different approaches, including humanoids designed for heavy payload applications, low-cost household robots, and robots for research and entertainment purposes. The market resembles a Cambrian explosion, with new opportunities rapidly emerging.

Technologies supporting humanoids: body, cerebellum, and brain

Humanoids consist of three key elements: the body, cerebellum, and brain. The body refers to the hardware. Among its components, actuators are particularly important. Without powerful and precise actuators, humanoids cannot reliably handle heavy objects or perform accurate movements. The cerebellum corresponds to motion and balance control technologies. Humanoids must maintain stable posture while performing tasks, requiring synchronized control of dozens of motor axes. The Yaskawa Group's strength lies in the motor technologies and motion control expertise it has developed through its longstanding focus on "motors and their applications." Combining the knowledge accumulated by Yaskawa over the past 110 years with Tokyo Robotics' technologies in force control and balance control represents a significant advantage in humanoid development. The brain corresponds to intelligence, including generative AI. This technology is essential for enabling humanoids to perform multiple tasks.

However, developing such capabilities requires substantial investment. Rather than developing these technologies independently, we intend to commercialize practical applications using conventional AI approaches while incorporating advanced AI technologies, including generative AI, developed by strategic partners in the future.

Shaping the future of humanoids through actuator technology

Tokyo Robotics is positioned as a research and development subsidiary within the Yaskawa Group. Our role is to explore future directions for the Group in the humanoid field and validate their potential. Through our collaboration, I strongly feel that both companies share the mindset of being a technology-driven company. Active exchanges among younger engineers have also created significant synergies, as they learn from one another through ongoing discussions and collaboration.

One area of particular focus is the joint development of QDD actuators*. Conventional industrial robots have traditionally emphasized continuous output. In contrast, humanoids performing tasks such as lifting heavy objects must effectively utilize high peak power. In addition, QDD actuators generate less friction, reducing the gap between simulation and real-world performance and making them well suited for AI-based learning. Actuators with these characteristics will significantly expand the range of tasks humanoids can perform. By combining the advantages of QDD technology with Yaskawa's strengths in high output and reliability, we aim to create physically capable humanoids that can handle heavy materials in factories and logistics warehouses. We believe these robots can deliver new value in labor-intensive operations, such as palletizing and truck loading and unloading, where labor shortages are becoming increasingly severe. At the same time, realizing this vision will

require more than our efforts alone. The widespread adoption of humanoids will depend on an ecosystem that includes AI developers, service providers, data collection companies, component manufacturers, and end users. Because the humanoid market is still at an early stage, high returns on investment are unlikely in the short term. That is why cooperation among stakeholders is essential to foster market growth.

I believe that creating humanoids capable of delivering real value in the field will be the first step toward growing Japan's humanoid industry. Rather than allowing humanoids to remain a temporary trend, we hope to establish them as truly useful technologies through the steady accumulation of real-world applications.

* QDD (Quasi-Direct Drive): A drive mechanism that combines a low-reduction-ratio gearbox with a motor to achieve both high torque and excellent controllability.



Humanoid robot development at Tokyo Robotics

Expanding Business in New Mechatronics Application Fields

Pioneering the future of drug discovery and healthcare through robotics and AI

RBI's challenge: From improving experimental reproducibility to real-world implementation

Leveraging the robotics technologies it has cultivated over many years, the Yaskawa Group is working to address challenges in research and development in the fields of drug discovery and regenerative medicine. At the center of these efforts is Robotic Biology Institute Inc. (RBI), a Yaskawa Group company that is advancing research efficiency and experimental reproducibility through the use of LabDroid "Maholo", a general-purpose humanoid robot. In this interview, we spoke with Kenji Matsukuma, President and CEO of RBI, about the value the company seeks to create and its future vision.



Kenji Matsukuma
President and CEO
Robotic Biology Institute Inc.

Taking on the challenges of drug discovery and regenerative medicine through robotics

The Yaskawa Group has long contributed to automation and quality improvement across a wide range of manufacturing fields, including the automotive industry. In research fields such as drug discovery and regenerative medicine, however, many processes are still performed manually.

As experimental results can vary depending on the experience and skills of individual researchers, ensuring reproducibility remains a major challenge. In addition, highly skilled researchers often spend substantial time on repetitive tasks, limiting the time available for the research and development activities that require their expertise.

To address these challenges through robotics technology, RBI was established in 2015. Our goal is not simply to automate laboratory work performed by researchers. Rather, we aim to improve experimental reproducibility and enhance the productivity of research and development.



Transforming tacit skills into technologies anyone can use

At the core of RBI's solutions is LabDroid "Maholo," a general-purpose humanoid robot.

"Maholo" performs experiments using the same laboratory instruments and equipment used by researchers. Because it does not rely on dedicated systems, it can faithfully reproduce laboratory procedures performed by humans.

Research laboratories are filled with tacit knowledge and techniques developed through years of experience. Much of this know-how, however, depends on the experience and intuition of individual researchers and cannot be easily shared. For example, "Maholo" can quantitatively record experimental procedures that researchers perform almost unconsciously, such as pipetting* speed, position, and waiting time. This makes it possible to share and reproduce techniques that were previously limited to highly experienced researchers.

By systematically varying experimental conditions, "Maholo" can also identify optimal parameters that may not be discovered through human experience alone. Once determined, these conditions can be shared across multiple robots and research sites, enabling consistent experimental execution.

Expanding applications in drug discovery and regenerative medicine

Today, "Maholo" is being utilized in fields including cancer genomic diagnostics and regenerative medicine.

In cancer genomic diagnostics, complex sample

preparation processes are required before DNA analysis. By performing these procedures with high precision, Maholo contributes to the generation of stable and reliable analytical results.

In the field of iPS cell culture, efforts are also underway to reproduce tasks previously dependent on experienced researchers. Joint research projects have already demonstrated successful results, including the production of retinal pigment epithelial cells derived from iPS cells.

Customers have recognized not only improvements in experimental quality but also benefits related to workstyle reform. Cell culture operations may require work on weekends and holidays, but the use of remote operation functions helps reduce the burden on researchers.

Our objective is not simply to address labor shortages. We seek to create an environment where a greater number of researchers can perform highly sophisticated experimental procedures.

From research to manufacturing: Collaboration with Astellas

The Yaskawa Group, including RBI, is currently collaborating with Astellas Pharma.

Astellas recognized the potential of "Maholo" at an early stage and actively promoted its adoption. Through this collaboration, a new idea emerged: robotics could be applied not only to research activities but also to the manufacturing of cell therapy products.

By combining Astellas' expertise in drug discovery and manufacturing with the Yaskawa Group's highly reproducible robotics technologies, we aim to establish a new model that connects research and manufacturing.

As part of this initiative, Yaskawa Electric and Astellas established the joint venture Cellaфа Bioscience Ince. in 2025. The company is developing a platform capable of supporting the manufacturing of regenerative medicine products and creating a framework that facilitates the practical application of research outcomes.

In the pharmaceutical industry, promising research results often encounter reproducibility challenges during commercialization. We believe robotics can help overcome this barrier. Leveraging the technologies and expertise cultivated by RBI in research settings, we aim to extend value creation beyond research and development into the manufacturing domain.

Creating new value through the integration of AI

One of RBI's key focus areas going forward is the integration of AI.

Robots can continuously generate high-quality data with minimal variation, making them highly compatible with AI technologies. Even today, some research projects utilize AI to optimize experimental conditions, achieving more efficient cell culture processes than conventional approaches.

Looking ahead, we envision a framework in which AI analyzes experimental results, determines optimal conditions, and enables robots to autonomously conduct experiments. By creating a new research environment where researchers, robots, and AI work together, we hope to contribute to further advancements in drug discovery and regenerative medicine.

Contributing to the future of healthcare and drug discovery through robotics

The biomedical field directly affects human health and lives, which is why we believe our work has significant social value.

Healthcare and drug discovery face numerous challenges, including researcher shortages, difficulties in ensuring experimental reproducibility, and the lengthy time required to develop new therapies. RBI is addressing these issues through the robotics technologies developed by the Yaskawa Group.

By improving the speed and quality of research and development and helping deliver new medicines and therapies to society more quickly, we aim to create value in the biomedical field that reflects the Yaskawa Principles of contributing to human welfare and social development.

*Pipetting: The process of accurately dispensing liquid samples or reagents into multiple containers in specified amounts.



General-purpose humanoid robot LabDroid "Maholo" operating on a cell manufacturing platform