



Special Feature: 1

Evolution of Our Technology

CTO Message



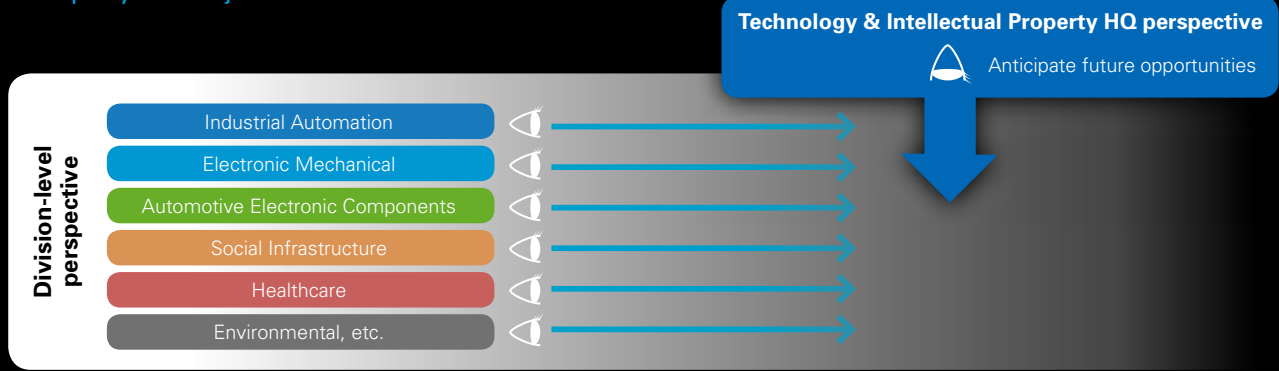
I was named the first Chief Technology Officer (CTO) at Omron Corporation when it instituted the position in April 2015. As Omron CTO, my main role is to plan and execute our technology strategy from a management standpoint. Beyond strengthening our core technologies, my responsibilities include building value for our future through new technologies stemming from open innovation and cross-organizational initiatives.

1. The CTO and the Role of the Technology & Intellectual Property HQ

Particularly after adopting an internal company system in 1999, Omron pursued corporate technology strategy on a division-by-division basis. We experienced a significant jump in the sophistication of our division technologies under this structure. However, we realized that adapting to a rapidly changing world required more flexibility. We needed to be able to uncover needs that existed in the spaces between the borders of our businesses. We needed a company-wide, cross-organizational approach to technology strategy. As CTO and head of the Technology & Intellectual

Property HQ, I am responsible for this cross-organizational strategy. I am also responsible for seeing future opportunities through the lens of technology over a frame of reference even longer than that addressed in our divisions. Since assuming my current position, I have been working to formulate medium- and long-term technology strategies and manage cross-organizational initiatives that encompass the entire Omron Group. In performing these duties, I will continue to promote open innovation through cooperative relationships between Omron and outside entities.

Technology & Intellectual Property HQ Projects





K. MIYATA

Kiichiro Miyata

CTO and Senior General Manager,
Technology & Intellectual Property HQ
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2. Evolving Core Technologies

To date, our core technologies have focused on Sensing & Control. The idea of this concept is to use technology to detect the status of a situation, process that information, and then perform an appropriate control. At present, we are evolving this concept by adding *Think*. This *Think* represents human intelligence.

In humans, intelligence is gained by analyzing volumes of information (data) and learning. In the market today, we see a flood of new business models that use IoT, AI, or other mechanisms to analyze and learn from a cumulative store of data. Adding *Think* to Sensing & Control will make a significant contribution to the growth of these business models. For example, we can

incorporate the concept of *Think* into controllers for manufacturing equipment and robots in factories. This takes us beyond giving instructions for pre-programmed routine movements into a world of systems that combine machine tasks with the condition of experienced human workers on the production floor. Another example is from the healthcare field. Here, *Think* means that we can do more than simply measure someone's blood pressure. When an irregularity is detected, we can provide more health-related indicators and important information that the individual may want. By strengthening our core technologies, we can produce even greater technological growth over the medium and long term in our businesses.

3. Creating Value for Our Future

Today, our technology development work looks ahead to the year 2030. Our major fields of focus are in manufacturing, healthcare, and mobility. By operating a multiple number of businesses, we have created a large storehouse of technologies across a variety of specialty fields. Cross-organizational initiatives between and among our business divisions generates amazing technology and application synergies. Allow me to introduce some specific examples.

At Omron, we have an initiative to redesign production by combining manufacturing and healthcare technologies. Under this project, we are working to integrate manufacturing technology and expertise with biological information sensing technologies from our healthcare business. The integration of these technologies allows manufacturing equipment to sense the health and movement of their human partners, providing appropriate controls in response. In this way, we provide an environment in which humans can work safely and efficiently in harmony with robots. Through systems like this, we can eliminate human error (careless mistakes, unplanned production stoppages, etc.) and offer greater efficiency for production activities.

Another initiative is our work in developing

new technologies in the growing field of driver assistance and sensing. During fiscal 2016, we developed an on-board sensor equipped with technology that senses the degree of driver concentration and determines whether the driver is capable of safely operating the vehicle^{*1}. This system combines first-of-its kind image sensing technology with leading-edge AI technology (time-series deep learning^{*2}). Integrating biological information sensing technologies from our healthcare business will allow us to go even further in sensing detailed information about a driver's state of health and consciousness. Omron will continue to conceive and develop new technologies in the large and growing field of automated driving.

Look for even more innovations from Omron in the future, as we continue to integrate expertise and technology to create new and surprising value.

*1 Related news release:

<http://www.omron.com/media/press/2016/06/c0606.html>

*2 Time-series deep learning: A type of deep learning technology. In general, deep learning technology has demonstrated extremely high performance in recognizing static images, while experiencing degraded performance in recognizing time-series events. Omron has successfully introduced independent improvements to Recurrent Neural Network technology, a mechanism that retains past information internally. This modified technology is capable of detecting the status of a driver and other time-series information with high precision.

■ Cross-Organizational Initiatives

