

FANUC Corporation

Platforms and applications opening new frontiers for manufacturing. Creating new value with the NTT Group.

Service: Co-creation of FIELD System factory IoT platform



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“FANUC and NTT Com shared expertise and built a mutually beneficial relationship that contributed to success in new business areas.”

Customer profile

Name: FANUC Corporation
Revenue: JPY 726.6 billion (as of March 2018)
Business: FANUC develops products that support factory automation in the areas of FA (mainly CNC, servos, and lasers), robots that use these technologies and robo machines.
URL: www.fanuc.co.jp

- Challenges**
 - Equipment and systems were needed to develop a factory IoT platform.
 - A business partner with abundant know-how was needed in this unfamiliar field.
- Solutions**
 - Choose a partner strong in the IT field to work together toward the same goals.
 - Overcome difficulties through collaboration beyond the usual client-provider relationship with NTT Group companies.
- Benefits**
 - Launched the service in Japan and plan to launch it in the U.S., Europe, Asia, and elsewhere.
 - Eagerly intend to expand “applications effective for manufacturing” in the future.

Challenges

We needed a partner in our FIELD System factory IoT platform development project

FANUC has pursued FA (Factory Automation) since 1956, when it became the first private company in Japan to successfully develop an NC (Numerical Control) device and servo. Today, the three pillars of FANUC’s business are FA, Robotics, and Robo machines.

FANUC has recently been focusing on new IT-based business. In 2016, it announced collaborative development of FANUC Intelligent Edge Link and Drive system (FIELD System) with Cisco, Rockwell Automation, and Preferred Networks. This IoT platform would connect devices and sensors made by various manufacturers, including FANUC’s CNC (Computer Numerical Control) system and robots. It would also contribute to open-source manufacturing and smart production by providing a common platform for connecting various generations of factory equipment made by different manufacturers.

Tamai of FANUC explains, “We will also offer various in-house and third-party applications through the FIELD System so users can accelerate the entire process of connecting equipment, visualizing operating status, analyzing collected data, and controlling edge devices with analysis results.” In other words, the goal is to create a new ecosystem combining a platform and applications.

To realize the concept and make it a practical service, however, the company also needed to build a support system such as for management of operations domestically and overseas, as well as distribution of applications. So FANUC sought a partner that specializes in IT and could work together on these projects.

Solutions

The NTT Group's overall strength to respond to future demands was a key factor

In choosing a partner, FANUC first and foremost required deep knowledge of edge computing (the base of the FIELD System) and the ability to swiftly and accurately implement/operate infrastructure-related equipment and networks essential for IoT.

The partner would also be required to develop high-performance software, swiftly adopt advanced technologies, and accommodate service expansion around the world. In addition, abundant experience in large-scale project management would be necessary for smooth advancement of various planned steps. "Our condition was that the partner must have comprehensive ability to actualize the FIELD System as well as resolve problems arising in the future," adds Tamai.

NTT Communications (NTT Com) was chosen because it satisfied all these requirements. In addition to vast business know-how and strengths in networks and cloud solutions, NTT Com has access to advanced technologies and software development capabilities through group companies such as NTT Laboratories and NTT DATA.

"The FIELD System project challenged us in areas we were unfamiliar with, but the NTT Group boosted our sense of security. We felt we could work together for many years to come," said Tamai.

Naturally the two companies have different areas of expertise and they hit roadblocks along the way, but FANUC's engineers and other project members held multiple discussions with NTT and built up relationships of trust. To solve each problem one by one and complete the platform together, the companies established a system of sharing risks and benefits. "This close relationship with NTT Com allowed us to accomplish difficult tasks," recalls Tamai.

Benefits

Building an ecosystem with our partner to enhance applications and adopt AI

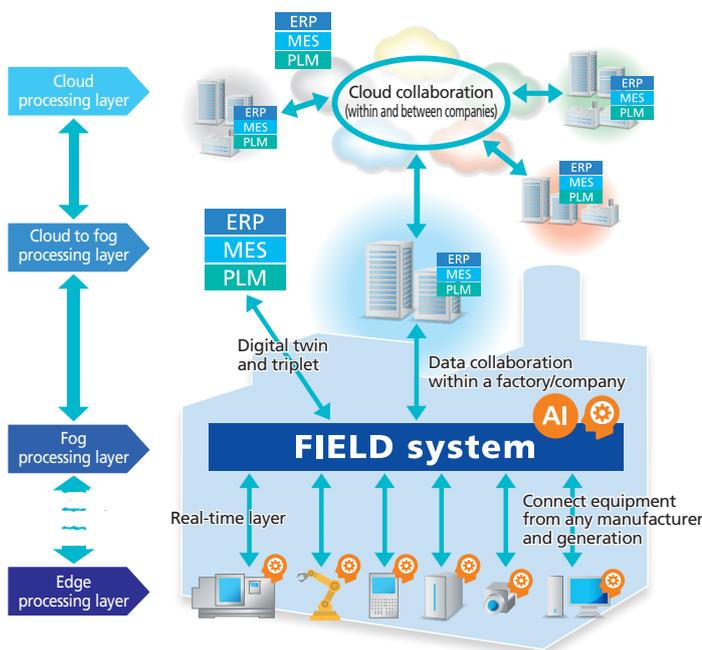
Officially released in the autumn of 2017, the FIELD System has already been used by multiple manufacturers and many more are showing interest. "Although most of our customers are currently conducting pilot projects at specific factories or lines, we expect more to use the system full-scale in the future based on positive outcomes," explained Tamai.

FANUC thinks applications that "connect, visualize, think, and control" will be the key to increasing full implementation. In the future, it will focus resources on the development of AI applications that provide "preventive maintenance" to minimize factory downtime, "inspection" to guarantee the quality of manufactured goods, "ease of use" including handover of expert know-how, and "productivity improvement" in output and accuracy.

In addition to applying AI to equipment failure prediction, for which 100% accuracy is not required, the company plans to apply AI to areas where more accuracy is necessary. For example, most machine tools produce heat while operating that gradually deform the tools and affect processing accuracy. Today, expert technicians maintain accuracy by using intuition and experience to compensate for such deformation. Replacing such know-how with AI will resolve issues related to task assignment, training, and loss of skills. "We believe many manufacturers need this technology in response to today's trends toward workplace reform and work hour reduction. We also want to thoroughly consider and realize applications that are effective at manufacturing," Tamai added.

FANUC will continue to optimize customer production through the FIELD System and plans to launch it in the U.S., Europe, Asia, and elsewhere. "We are hoping to make the FIELD System the fourth pillar of our business and look forward to continued support and suggestions from NTT Com," concluded Tamai.

Figure: FIELD System diagram



Various data can be processed more efficiently at the edge using NTT Com network technology.

NTT Communications Corporation

Website www.ntt.com

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