Fujitsu leveraged augmented reality to accelerate assembly and increase revenue

A new bookshelf; a dollhouse; an exercise bike. A box full of parts and a long instruction manual—for many, a familiar obstacle. Imagine the time savings gained by ditching the old paper pamphlet for a real-time, virtual instruction manual that guides the user through the exact placement of each part. In the manufacturing world, this is a game changer.

A growing need for digital transformation

Realizing the benefits of digital transformation can go a long way in helping businesses build a strong foundation for future growth. One company that succeeded in scaling operations through the power of data is Fujitsu Network Communications. Founded in 1980 and headquartered in Richardson, Texas, Fujitsu Network Communications is a leading force in delivering digital transformation solutions to network owners. They specialize in open programmable networks, automation and orchestration software, and integration and co-creation that help leading carriers, MSOs, MNOs, ICPs and verticals deliver new communications services. Fujitsu plays a key role in helping their customers build and operate the critical network infrastructure that enables the growing remote work reality.

ptc

A taxing production process meant loss of time and opportunity

The telecommunications industry operates through a complex mix of intricate parts and sophisticated software, all working together to enable voice, video, and data communications. Many Fujitsu customers faced a particular challenge in this realm: network systems were highly complex and difficult to assemble in the field. Due to the unique requirements of each customer's order and network, no two systems were configured alike, making it impossible to include one-size-fits-all assembly instructions. Furthermore, every system deployed included several hundred pieces, and each piece required placement in exactly the right spot to function as designed within the larger network. Many customers simply didn't have the time or expertise needed to assemble the system while simultaneously maintaining network services.

Fujitsu recognized this customer challenge and knew it was an issue they needed to address. They wanted to offer the option of receiving a

pre-configured system so that field installation would require customers to simply plug in and power up. But pre-configuring each network system in their own manufacturing facilities prior to delivery proved to be a time-intensive and costly endeavor for Fujitsu.

The steps to configure each network system were long and complex. Fujitsu operators had to pick up a part and read the part number; locate the part number on a corresponding bill of materials printed out on long pieces of paper; reference a drawing of the system and find the reference for that particular part number; and finally, walk over to the actual system and attempt to remember where the part belonged based on the drawing. This paper drawing-based method proved as impractical in the Fujitsu factory as it was for customers in the field.

Additionally, there were a lot of complex decisions the operator had to make in order to assemble the system correctly. Fujitsu software engineer Thomas Chiu says it became clear that they needed to address a central question in order to move forward. "How could we guide the operators and help make those decisions for them, and make their jobs easier, faster, more efficient, and less error-prone?" says Chiu. The need to digitize operations had become clear—and it was only a matter of how.

A new approach to accelerate throughput

Fujitsu realized that with a new approach to internal production, they could maximize throughput and better address customer needs. They tried several solutions, both low-tech and high-tech, but none offered the adaptability needed to help their workers become more efficient with assembly. Then a chance business encounter shed new light on a potential solution.

Another subsidiary of Fujitsu's global parent company was interested in exploring augmented reality (AR) as a solution for company challenges, and they approached Fujitsu to inquire about potential use cases. One of their engineers visited Fujitsu, and together they observed factory floor operations to determine which areas of production could be boosted by AR—and the goal to help customers by pre-configuring network systems seemed the obvious choice.

As a longtime customer, Fujitsu had deep trust in PTC's product quality and expertise on the industrial enterprise. They knew the value in turning to PTC's line of AR products to propel them toward their goal.

Fujitsu used Vuforia Engine to implement an AR instruction manual for operators

The Fujitsu team knew that eliminating the tedious process of following multiple physical schematics and assembly instruction manuals would ultimately reduce the cost of assembly.

"It's a massive simplification of a very complex process."

Barrie Hall,

Fujitsu Senior Vice President of Fulfillment

To do so, they needed a tool that would enable workers to assemble network systems quickly and efficiently, while avoiding costly errors. With its unparalleled accuracy and advanced computer vision, Vuforia Engine was the clear choice to help them create a user-friendly, in-context visual guide that could dramatically increase operator efficiency on the factory floor.

Using Vuforia Engine, a software for creating AR experiences, they developed an app to pair with Microsoft HoloLens. The app integrated customer order information with design configuration data, resulting in a real-time AR instruction guide overlaid on the network equipment. The assembly process was dramatically simplified for operators: wearing the HoloLens, they would start the assembly process as normal. But now, instead of visually reading each part's bar code, the operator could simply scan it. When scanned, the AR app indicated to the operator exactly where to install that part by highlighting the correct location with a bright red outline that showed up on the actual system surface. A green outline then appeared to indicate a correctly installed component.

The new guide allowed operators to efficiently and accurately configure systems in ways not possible before. With largely positive operator feedback, excitement to try the new technology grew internally. Fujitsu Senior Vice President of Fulfillment Barrie Hall summed up Vuforia Engine's incredible value in undertaking such a huge project: "It's a massive simplification of a very complex process," he says. Using AR, operators were able to access critical instructions in-context, which greatly sped up the assembly process.

Immediate savings of time and money while increasing quality

Use of the new AR assembly instruction manual quickly showed promising results in improved efficiency, productivity, and quality. Operator training time decreased from three to five days to approximately one hour. Overall assembly of most systems went from 120 minutes to 97 minutes, a 19 percent increase in productivity. Even more impressive, installation of the SFP (small form-factor pluggable) transceivers went from 53 minutes to 31 minutes, a 42 percent increase in productivity.

"This technology has enabled us to provide a solution to a significant customer challenge and bring in new business that wouldn't be possible otherwise—it's a great positive for everybody."
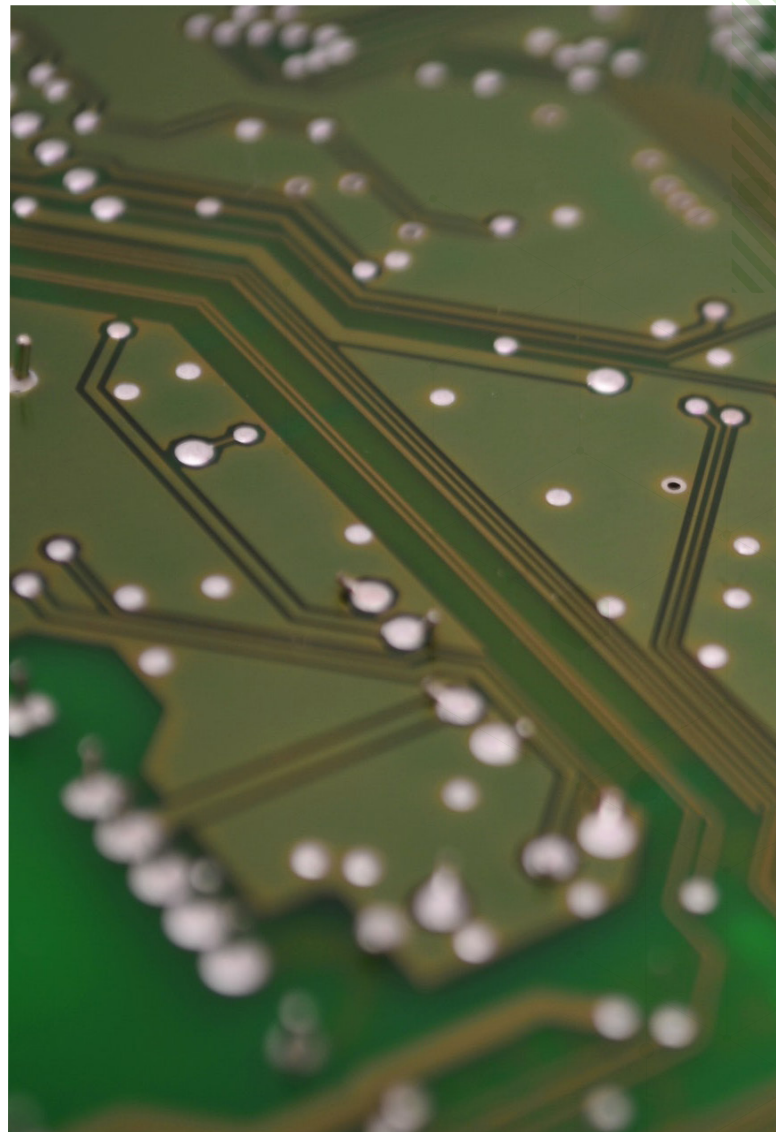
Barrie Hall,

Fujitsu Senior Vice President of Fulfillment

The investment was a clear game changer for Fujitsu's revenue stream and customer expansion. "This technology has enabled us to provide a solution to a significant customer challenge and bring in new business that wouldn't be possible otherwise—it's a great positive for everybody," says Hall.

Fujitsu responded to a customer need while generating revenue

When faced with the core business need of helping customers assemble network systems in the field, Fujitsu knew Vuforia was the answer. With the level of internal success achieved, Fujitsu recognized they had an opportunity to turn the pre-configuration process into a regular service offering for their customers—which not only increased customer satisfaction, but also created a new source of revenue for Fujitsu.

By partnering with PTC, Fujitsu is now bringing this concept to market as a new and advanced service, helping their customers improve business productivity thanks to incredible time savings across their operations. Fujitsu is steadfast in the belief that their PTC partnership has unlocked a new vision for customer service and growth. "It's such a powerful scene for people to see—it's something unique and compelling," says Hall. "When people understand what it does for them out in the field, and they understand the technology we're using behind it, it really is an enabler to help us win new business." As for how Fujitsu can keep expanding its customer offerings with PTC in their corner, the possibilities are truly limitless.

www.ptc.com/en/case-studies