Bell and Howell Transforms the Business of Service

BH Connect Solution Built on ThingWorx Achieves 60% Reduction in Mean Time to Repair

A Multi-Year Service Journey

As one of the largest and most sophisticated service organizations in the world, Bell and Howell keeps the world's largest finance, industrial, and public sector enterprises humming smoothly.

Whenever you pick up a prescription, receive a credit card in the mail, or place a grocery order online for in-store pickup, you may well be engaging with services and solutions made possible by Bell and Howell. In addition to providing a range of industrial automation solutions, the company services more than 30,000 assets manufactured by more than 30 OEMs, providing 24/7/365 customer service and tech support.

Three years ago, the company was at an innovation crossroads. As impressive as its high-tech production workflow and automation systems were, Bell and Howell knew it could deliver even more value. "In the past, you might've gotten away with 90%, 95% uptime," explains Jim Feely, Senior Vice President at Bell and Howell. "Today it has to be 99% to 100% uptime. The only way you're going to have that is to repair problems before they occur. And the only way you do that is with predictive analytics."

The company embarked upon a quest to evolve its approach to service from a reactive state to a predictive service model in the fastest and most efficient way possible. Three years into the journey, results have been impressive for both Bell and Howell and the customers it serves.

"We're growing our business tremendously," says Feely. "That growth has come because our technology has improved, along with our ability to provide level of service that is well beyond our competitors in the industry."

A Manual, Inefficient Service Process

Bell and Howell was highly motivated to explore how industrial IoT (IIoT) technologies could drive innovation in service delivery and help the company to resolve some of its most significant challenges.

Its existing process for servicing machines was time-consuming and not as efficient as it should have been. While the service network connected its more than 800 field technicians to the call center via handheld devices, the process of analyzing machine data to diagnose problems and relay information to technicians was more cumbersome.

When a machine experienced a technical issue, a multi-step service process began that took, on average, two-and-a-half hours to complete. Upon receiving a call from a customer raising an issue, the call center would manually create a service ticket. The system then assigned the ticket to the next available technician who would troubleshoot and resolve the problem, most often at the customer site.

Bell and Howell recognized that fundamental change would require not only connectivity to equipment and systems, but also integration of automated data aggregation and analytics. An IIoT platform was a clear prerequisite, and a search for the right solution began.

Evaluating IIoT Platforms for Service

Bell and Howell evaluated four IIoT solution vendors using criteria related to machine connectivity and analytics. The company sought an established and trusted leader with IIoT expertise. For fast, demonstrable results, it was important to choose a provider with a proven track record for quick return on investment and a ready, purpose-built IIoT platform to enable agile development of solutions.

The company ultimately selected PTC's ThingWorx Industrial IoT Solutions platform—an end-to-end technology platform that provides a single solution for connectivity, application development, analytics, and administration.

Implementation of the ThingWorx platform into Bell and Howell's existing application development environment was seamless, thanks to built-in integration between ThingWorx and the Microsoft Azure cloud platform. Microsoft Azure provides Bell and Howell with an ever-expanding set of cloud capabilities to help meet its service challenges. The combination of ThingWorx and Microsoft Azure provided the flexible and secure foundation the company needed to build, manage, and deploy its growing service portfolio at scale.

With these pieces in place, the company moved on to its first connected service project.

BH Connect: A Complete Solution for Service Transformation

With BH Connect, the company's premier connected service offering, Bell and Howell provides a comprehensive suite of service capabilities, including remote monitoring, diagnostics, and repair. From the start, customer response was overwhelmingly positive.

The costly and time-consuming "drive-diagnose-repair" cycle was replaced with faster, more efficient remote diagnostics. This allowed Bell and Howell to shift from on-premise to remote service delivery, which now accounts for more than 70% of all service calls in one segment of the business. In many cases, technicians are able to complete equipment repairs remotely, contributing to a significant reduction in overall repair times.

Says Feely, "One of our customers biggest concerns is service response time. With BH Connect, we are now capable of providing almost immediate response. When I ask, 'How fast do you need a repair person?' they say, 'I want someone to beam over.' Well, now we can do that."

Upping the Ante with Advanced Analytics

Building on the success of BH Connect, Bell and Howell turned to the next step of its digital transformation journey: using advanced analytics to gain performance and operations insights that enable customers to optimize operations, drive smart-decision making, and reduce downtime.

Success: By the Numbers*

- 71% of service calls are now fixed remotely
- Troubleshooting time cut by a full hour per service call
- 60% reduction in mean time to repair
- 30% reduction in maintenance frequency and duration with cycle-count-based prescriptive maintenance and predictive parts replacement
- Service technicians achieve first-time-fix rate of 92%

**where BH Connect is implemented*

The company's advanced analytics solution built on ThingWorx—BH Analytics 360—collects and analyzes data from connected machines and provides the results in user-friendly formats to service technicians, customers, and management. On these connected machines, technicians now have access to deep, actionable insights right at their fingertips, when and where needed most to help make confident, informed decisions.

Dr. Haroon Abbu, Vice President of Data Analytics at Bell and Howell, notes, "For the first time, we have the ability to identify and solve problems before the customer even knows they exist. This will add tremendous value to our service operations and transform service delivery and outcomes for our customers."

The Power to Predict and Prevent Downtime

Maximum uptime is the primary goal for every Bell and Howell customer. Remote service is key to resolving machine malfunctions quickly to minimize interruptions in operations. But, of course, what customers really want is to prevent downtime from occurring in the first place. Enter, predictive service.

Feely explains, "With ThingWorx, we know how a machine is running. So, now we're able to detect problems before a machine fails, which is the whole key to predictive service. If I can figure it out before it fails, I can fix it before it causes downtime. It's a major plus for our customers, and one of the key areas that differentiates Bell and Howell."

At Bell and Howell, data from connected machines is monitored and gathered continuously for on-demand insight into real-time performance, operating status, environmental conditions, expected behaviors, wear-and-tear, and indications of potential problems. This is the basic foundation upon which the predictive service strategy is built:

- Establish data patterns for normal performance
- Detect unexpected changes in behavior in real time
- Quickly identify the issue and diagnose the cause
- Prescribe the best course of action to preempt malfunction (and avoid downtime)

Connected machines generate enormous volumes of data, which can be difficult to manage manually. ThingWorx takes this wealth of data and analyzes it using sophisticated, automated machine learning and artificial intelligence. It produces a range of analytic output—from descriptive and historical analysis to predictive and prescriptive insights—using visualizations and language suited for the everyday user.

With service employees more knowledgeable and effective than ever, Bell and Howell has completely upended its service game, and the real winners are its customers. For them, predictive service means maintenance is completed on or ahead of schedule, parts replaced before end of life, and functional problems resolved with minimal interruption, all of which translates to one thing: more uptime.

And when unavoidable issues arise, field service technicians are equipped with a better understanding of what makes that machine tick—performance data and analytics that, when combined with real-time views, help them to diagnose the issue accurately, identify the cause, and provide quick resolution.

> **Seeing the value ThingWorx has brought to our service offerings and the additional benefits uncovered, we are currently working towards deploying ThingWorx across our full product line to deliver more actionable, analytics-based offerings to our customers.**

Dr. Haroon Abbu
Vice President Data Analytics, Bell and Howell

IIoT-Enabled Service Journey: What's Next

Given its swift success and return on investment, Bell and Howell plans to connect several more classes of machines to its BH Connect platform to maximize service efficiency. The company is poised to continue and increase investments in IIoT technologies and solutions for service, such as expanding its service portfolio to include augmented reality–based service offerings. With the ThingWorx platform, Bell and Howell is fully equipped to deliver innovations in customer service that offer robust, high-quality solutions for its customers and create new revenue streams for the company.

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