How Predictive Service and Maintenance Revolutionize Enterprise Operations

Performing and keeping track of critical equipment maintenance, from vehicle fleets to manufacturing machinery to huge industrial pumps and more, has for decades been a challenging task for enterprises. It requires logistics, trained workers, replacement parts inventories and just-in-time connections to bring the necessary parts, people, and expertise to the right locations to get important equipment back into operation as quickly as possible.

Before we dive into these concepts further, let's take a moment to define them and explain how they overlap across enterprise asset management and field service management. Predictive maintenance is very asset-focused and uses IoT sensors to capture real-time and historical data and perform condition-based monitoring. The IoT sensors collect data on temperatures, vibrations, pressures, service hours, humidity, RPMs, locations, and more.

Next, data analysis tools—sometimes enhanced by machine learning—detect anomalies and identify potential equipment defects so that they can be resolved before an asset fails. It's important to note that predicting asset failures is hard; predicting inefficiencies is what organizations should do most of the time. A common example is detecting that a motor is not using energy efficiently even though overall output is 100%; by changing the pump, energy costs can be reduced.

When an anomaly is detected is the point at which we cross over from the asset-based realm into the need for maintenance or service, with some field service scheduling optimization engines being able to automatically generate a work order and send a technician onsite in order to prevent equipment inefficiencies or failures. In the end, service and maintenance can have both big differences and similarities depending on the perspective of industry vertical.

Traditional equipment maintenance programs are based on preventative maintenance, meaning they are calendar- or counter-based (such as mileage of a service van), sending repair personnel out on a regular basis to inspect critical machinery and assets for potential problems. Field engineers routinely spend time and effort checking on equipment in a schedule driven process, even when no problems exist. There is still value in this approach, yet there is opportunity for the right case with predictive maintenance to reduce costs by performing this work less frequently and in more of a prioritized way.

Over time, there will be a gradual overlapping of these models. The key to success for enterprises will be finding the right mix of preventative, reactive and predictive maintenance. In the future, instead of only having the ability to react to sudden equipment or fleet vehicle breakdowns, or investing in regularly scheduled but inefficient preventative visits, enterprises can analyze all the IoT sensor data they are collecting to predict maintenance needs based on the real-world asset and equipment failure rates that are being observed in their data streams.

Maintenance Needs Provide Varying Challenges Across Industries

Industries perform equipment maintenance, fleet services, and field service management in different ways. And because their installed assets can vary greatly, every sector has unique challenges. Even within verticals, maintenance differences can be stark. Manufacturing subindustries for example can be incredibly broad, from automotive manufacturers to life sciences companies to high-tech equipment and medical device manufacturers.

In aerospace and defense, each subsector has unique regulatory requirements and specialized certifications needed for field engineers to be able to service their assets. Energy utilities must provide critical 24/7 services to residents, business, and governments, requiring them to keep huge inventories of equipment functioning while having real-time visibility into their assets' locations and performance. Similarly, telecommunications firms must deliver reliable communications services and keep cell towers, fiber networks and data centers all running smoothly.

With each industry and company having its own needs and stage of digital maturity, adopting the right combination of technology systems is a very real challenge.

The Critical Benefits of a Field Service Management (FSM) System That Delivers Predictive Capabilities

These challenges are creating many a-ha moments, with business and IT leaders realizing that the advanced technology needed to compete effectively today is far beyond the capabilities delivered by the FSM systems of old.

And that is where predictive service and maintenance capabilities can deliver value, giving enterprises powerful new tools that enable them to better manage their employees, assets and facilities.

The realities of industrial equipment and vehicle fleets that can "sense" impending problems and "tell" managers that something is amiss before production lines and operations grind to a halt has long been a dream. Yet this is no longer a dream — the technology exists today. Through related advances in artificial intelligence (AI), machine learning (ML), and the Internet of Things (IoT), predictive capabilities are now ready to be adopted. AI and ML allow vast amounts of IoT sensor data to be captured, analyzed, and evaluated to reveal the conditions of just about any part, system or asset in real-time.

Next on the horizon are digital twins, which are virtual representations of almost anything mission-critical to an organization—a robotic arm in a smart factory floor or an entire production process, an airplane or a construction site—all of which can be simulated without having to spend a dime on a physical model, giving enterprises wide latitude to explore new ideas and methods without investing a lot of time and money. The simulation of your processes and systems, not just your assets, will allow your organization to start thinking, 'what if these things go down together, how quickly could we recover?' or 'how can we look after these machines more efficiently, even with a constrained workforce?'

The possibilities are exciting. All these related advancements give leaders unprecedented operational insight and provide a myriad of ways businesses can increase the value they deliver to end customers. And the more data that's collected, the more intelligent an enterprise can become.

Yet while enterprises are beginning to collect and analyze incoming data, they are often discovering that it is not easy to leverage it within their existing FSM or enterprise asset management (EAM) systems. By incorporating an open, composable platform, companies can use their data to solve many of their biggest operational challenges and greatly reduce outages and shutdowns. This composable approach to enterprise technology is

what Futurum believes is essential to solving the complex service and maintenance challenges being experienced across verticals.

That said, there are a number of prospective solutions out there, and figuring out what's best can sometimes be complicated. But we think of it this way: the right platform will offer innovations like predictive maintenance that are deployable out-of-the-box and are contextualized for specific industries and use cases, making them easier and more cost-effective to adopt and accelerating ROI.

A platform built on a composable architecture also helps companies to break down traditional silos and to create just the right blend of functionality from applications like FSM and EAM that they need. Additionally, it is important that the chosen platform be built on a sophisticated data model so that it's able to provide a comprehensive view of hundreds, thousands or even millions of connected assets. It also goes without saying that a platform's ability to scale as companies expand is a must.

IFS Delivers Advanced Predictive Service and Maintenance Capabilities

The promise and broad benefits of predictive service is what led us to evaluate the IFS Cloud Platform.

We believe the IFS Cloud Platform is well-positioned in this space, with the ability to provide enterprises with the modern AI-enabled technologies that are needed to deliver amazing service experiences—what the company has coined as Moments of Service™—and taking the guesswork out of how to apply predictive service capabilities by seamlessly embedding them into their EAM or FSM process.

The IFS Cloud platform delivers a connected, unified experience that provides real-time analytics for agile decision making. IFS Cloud uses a flexible, open architecture and APIs, integrating a series of modules that help enterprises meet their specific needs. In addition, we like that fact that users have a deployment model choice in running IFS Cloud. They can opt for running it as a cloud service from IFS directly, as an on-premises application, or through a remote data center of choice. Equally as important, and what is making these options more useful, is that the IFS Cloud deployment location can be changed as needed, adapting as an enterprise's needs change.

IFS Cloud is designed in such a way that it can be dovetailed with other solutions, rather than requiring the reconfiguring of entire enterprise infrastructure and application stacks. Those applications can include ERP, mobile workforce management, EAM, FSM and more. Using IFS Cloud with its predictive service capabilities alongside existing mission-critical business systems, means enterprises can add new features with far less hassle and costs than if they swap whole platforms.

Another attractive part of the IFS Cloud Platform value proposition is that by building AI, ML, digital twins, and other advancements as embedded innovations, the hard work is done for enterprises, so they don't need to run their own proof of concepts to design the capabilities to support specific use cases or to tie all the needed pieces together.

IFS Cloud is bolstered by low-code and no-code tools, as well as by consistent user interfaces on any device through dashboards, a browser-based interface, and even offline-capable apps.

Also adding major value is that IFS Cloud supports enterprise decision-making by providing detailed data visualization, reporting, and analytics. Plus, data can be cleansed to eliminate information that is not relevant to a company's analysis. Lastly, the IFS Cloud rule automation engine monitors observations and if they exceed defined thresholds or anomalies are predicted by machine learning algorithms, alerts are triggered, and work orders generated, all in real time.

Building predictive service and maintenance into IFS Cloud is a smart move by IFS, helping enterprises to reduce infrastructure complexity and costs while optimizing asset availability and operational efficiency.

For companies making the move from reactive to predictive and proactive service management, we recommend consideration be given to IFS Cloud. It provides rich capabilities, deep data insights, flexible programming, and transformational business improvements and boosts an organization's agility in a rapidly changing environment.

Discover more about predictive maintenance trends in the Futurum Research briefs on Asset Lifecycle and Asset Performance Management.