bmc helix
Control-M

eBook

Deliver Better Outcomes with Data-Driven Predictive Maintenance

Identify issues before they impact your business

We've all waited for deliveries that don't come when expected. And while there may be a host of reasons for the delay, often the cause is something as simple as mechanical failure—for example, the truck broke down. The effects of that disruption ricochet not just for you and your package, but for every other package on the truck and every expectant customer. And the delivery company loses productivity for the truck and driver and incurs the time and expense of offloading the cargo to another truck, repairing the first vehicle, and managing customer satisfaction, or in this case, dissatisfaction. What if all of that could be headed off at the pass?

If there was a way to see imminent or approaching failures ahead of time and plan for them, that would be pretty handy. Accessing and reviewing the right data at the right time can do just that by enabling maximum resource efficiency to reduce unexpected incidents and deliver better customer outcomes. In this eBook, we'll take you through our proven approach to solving these issues and share with you the success stories of companies who have mastered predictive maintenance.

Moving past manual processes

In a traditional environment, systems maintenance is routine, occurring on a fixed cycle and in person as personnel scheduling permits. If a component fails between maintenance cycles, then the resource is idled, or worse, damaged, costing additional time and money and a loss of productivity. Predictive maintenance solves for all of that, doing exactly what it sounds like: **remotely predicting mechanical, electrical, and digital disruptions before they happen, telling you when you need to conduct maintenance to keep your business running optimally with maximum uptime and efficiency and minimal costly repairs.**

Easier said than done

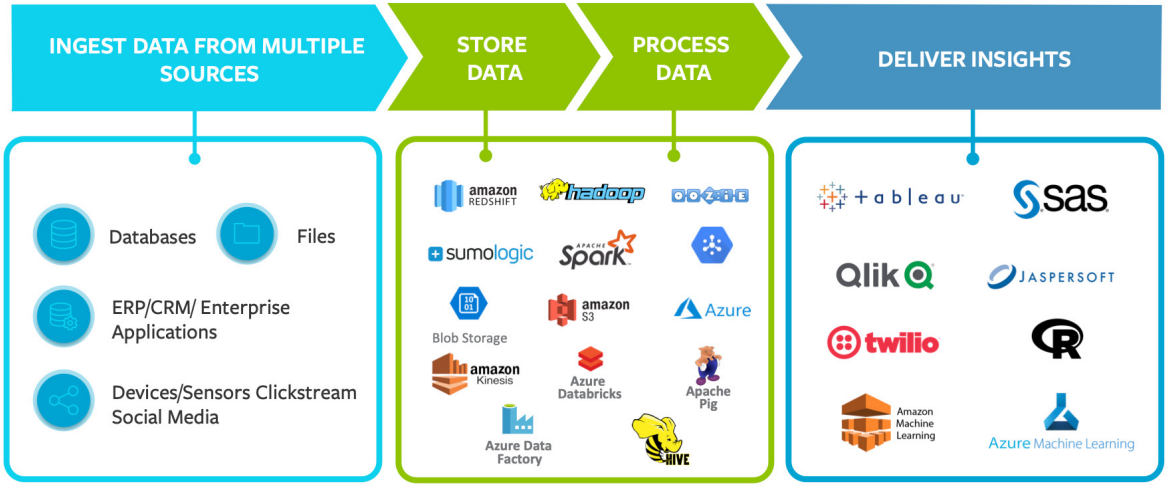
There is an art and science to having the right solution to get there. Predictive maintenance is achieved through intelligent automation and the collection, collation, and analysis of data retrieved from multiple systems of record, as well as remote, wirelessly-networked sensors embedded into machinery. Sounds fairly straightforward, right? Yes and no. Almost every big data project has four distinct data stages: ingestion, storage, processing, and most importantly, analytics and the delivery of insights that drive faster and smarter decision making. There are a lot of moving parts. Ingestion involves data retrieval from traditional sources such as enterprise resource management (ERM), customer relationship management (CRM), financial systems, and other systems of records, and the not-so-traditional sources like social platforms and Internet of Things (IoT)-derived data from devices and sensors.

MarketsandMarkets forecasts the global predictive maintenance market size will grow from $4 billion USD in 2020 to $12.3 billion USD by 2025, with a CAGR (*Compound Annual Growth Rate*) of 25.2 percent.

That process, as well as storage and processing, is typically done by a complex and growing list of multiple, inter-related technologies. The last and most important mile of the data journey—analysis and delivery—encompasses not only historical data retrieval but also newer technologies like machine learning (ML) and artificial intelligence (AI).

The data sets can be enormous, and the number of sensor and record repositories can be equally large and unwieldy. To wrangle the data, it's imperative to have an orchestrator in place that can come in over the top, take a holistic view of all those moving pieces, and make determinations on process and potential issues to keep the data flowing to the right places at the right time. The snapshot below gives you a good idea of the number of applications and systems involved.

Simplifying Complex Data Pipelines



Predictive maintenance can make sense of all that data and help you plan ahead. With the above example above about the broken-down delivery truck, predictive maintenance can potentially prevent the breakdown. Once brewing problems are detected and identified, services can be proactively scheduled and synched with the availability of parts and service personnel to ensure the truck with your package runs as expected and your delivery arrives right on time.

Predictive maintenance that uses the power of large data sets and advanced statistical modeling is becoming mission-critical to drive mechanical asset uptime and safety in transportation and logistics, oil and gas, and discrete manufacturing, among others. Beyond these industrial applications, similar predictive approaches using data analytics are also being applied in other industries and use cases.
For example, banks and credit card companies now parse through vast amounts of transactional data to identify fraudulent transactions in real time, mitigating what can be significant financial impacts and damage to business reputation. Retailers are using a wide variety of consumer data—from online behavior to advertising response to purchase records to in-store behaviors—to predict and deliver highly-customized, real-time promotional offers specific to each customer's personal interests. These are just some of the many examples of predictive analytics and other similar large data set analytical processes that are driving the growth of many of the world's most disruptive companies.

It's no surprise that data is everywhere—the data-driven business is one tenet of the Autonomous Digital Enterprise, a forward-looking view of the future state of business where agile, customer-centric, insight-driven companies evolve their operations to survive and thrive in the midst of persistent disruption.

A study by PwC tracked the benefits of predictive maintenance in four key areas:

9% Improved uptime

12% Lowered costs

14% Reduced safety, health, environment, and quality risks

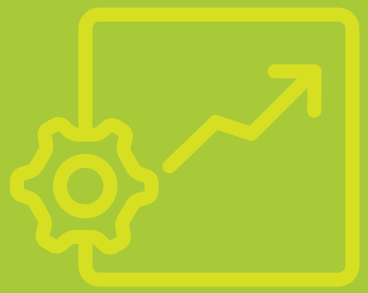
20% Extended life of the equipment

Source: Predictive Maintenance 4.0, PwC, 2018.

Problem solved

Creating these business outcomes at scale is difficult without an orchestration platform that can manage all of the highly complex processes. BMC Helix Control-M is a SaaS-based application workflow orchestration solution that can do exactly that for companies across many industries. As a single point of control that integrates and orchestrates these workflows, BMC Helix Control-M automates the entire process of ingesting, storing, processing, and analyzing data across all of those applications—at scale—to predict breakdowns before they happen, proactively schedule service before breakdowns occur, and deliver the desired business benefits.

Here are a few examples of how companies across multiple sectors have leveraged application workflow orchestration to achieve positive business outcomes.



Customer Success:

A leading provider of technology solutions for the railroad industry provides it's customers with a wide range of workflow-based digital services that gather and move data from systems of records and rail car and track sensors, and then convert it into actionable insights. It's data collection on a massive scale.

By tracking shipments across the North American freight rail network, the company leverages application workflow orchestration to monitor equipment health to ensure the safe movement of cargo, provide predictive maintenance alerts, and forecast train traffic conditions to prevent or reduce train congestion in critical areas.

40,000
locomotives

1.6
million traveling railcars

140,000
miles of track

1,700
rail car owners

560+
local and regional railroads

7
Class-I railroads

50
terabytes of data from disparate sources

A McKinsey study on predictive maintenance in the rail sector pointed out that "pure analytics and prediction models are not precise, sufficient, or comprehensive enough to support a predictive maintenance scheme...Rail operators/rolling stock OEMs need to find a way to effectively couple rail engineering expert knowledge and analytics power because it will take rail experts and analytics scientists working in tandem to develop powerful models."

Application workflow orchestration helped make that a reality when the company needed a simple way to build, run, and manage the workflows that execute delivery of its services. This organized the company's industry-specific analytics platforms and applications to schedule and monitor complex, event-driven batch processes so the company can deliver essential, time-critical data to its customers.

Application workflow orchestration has been an integral part of the company's data and application strategy and an initiative to send predictive maintenance alerts to fleet owners so they can monitor the health and usage of their leased equipment. Collected data includes trip length and mileage, and information on who actually has the railcar at any given time. The solution also offers full visibility into and control of jobs across multiple systems.

Once a potential delay or failure is detected, an alert is immediately generated, enabling customers to meet their business service level agreements (SLAs) and keep rail operations flowing. The company can also extrapolate that information about delays or failures to cascade applicable warnings to its customer base if the equipment is commonly used, saving time and money and preventing downtime beyond the immediately-affected customer and car.

Customer Success:

A leading heavy equipment manufacturer produces over-the-road trucks, engines, and school buses for fleet owners and over 1,000 dealers worldwide. A recent study by the American Transportation Research Institute reported that the marginal cost per mile for repair and maintenance for trucking companies reached 17.1 cents in 2018, a 38 percent increase from 2010—and it rises to 27 cents per mile on tank trucks, which have more specialized equipment. That quickly adds up when you think about the millions of miles driven—an average of 91,000 miles per truck—every year.

The company has evolved with the times, adopting a digital transformation model to deliver business-critical digital services to its customers, including its proprietary solution which improves vehicle service utilization information and saves bottom-line operating costs for its fleet customers.

The company leveraged application workflow orchestration across all of its platforms and part of its proprietary solution to set up and schedule IoT job streams. It collects and processes over 20 million IoT data records per day from built-in sensors on more than 350,00 trucks—a five-fold performance improvement vs. traditional methods.

With this data, the manufacturer can monitor driver performance, as well as each vehicle's fuel economy, geographic location, idle time, and potential parts or systems failures. From there, operators can diagnose issues as they develop, provide real-time guidance to fleet owners, and direct vehicles to dealer service centers that have parts ready for quick servicing. That's a win-win all the way around: fewer equipment emergencies, less time in the garage, more time on the road, and a higher return on investment per vehicle for maximum utilization and profits.

The company reduced unplanned repairs by up to **30 percent** and downtime by over **40 percent.**

Customer Success:

Production wells are at the heart of generating revenue for a leading U.S.-based oil and gas company, and equipment failures that disrupt well operations directly impact that revenue. The company recognized the need to move beyond traditional, scheduled on-site maintenance that can miss—or be too late for—imminent failures, incurring significant costs and time-consuming repairs. In an effort to capitalize on modern technology, the company decided to adopt a predictive maintenance model that could remotely collect and analyze data from well sensors and combine it with data from systems of record.

Analytics-based field alerting has created value of $10 million to date as of 2019 for the oil and gas company.

They implemented application workflow orchestration across a hybrid infrastructure of cloud and on-premises. With predictive maintenance, operators save the time and expense of an in-person routine check-up of every well. Predictive maintenance also allows the company to project the financial impact of outages per well so they can prioritize repairs in case of multiple well failures.

Conclusion

Using data-driven predictive analytics, and predictive maintenance in particular, can help companies across a range of industries plan ahead and prevent the surprise disruptions that can derail operations and severely impact productivity, profit, and customer experiences. BMC Helix Control-M orchestrates the volumes of data and many disparate systems that work together to drive those analytics and deliver broad-stroke benefits for businesses and their customers, enabling better outcomes for all involved.

For more information on BMC Helix Control-M, visit: www.bmc.com/helixcontrol-m

About BMC

From core to cloud to edge, BMC delivers the software and services that enable over 10,000 global customers, including 84% of the Forbes Global 100, to thrive in their ongoing evolution to an Autonomous Digital Enterprise.

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Deliver Better Outcomes with Data-Driven Predictive Maintenance

ABOUT [PARTNER]

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