



Transforming Service Delivery with the Industrial Internet

Maximizing Customer Lifetime Value



There are few times in history when a perfect storm is poised to shift an entire industry. We are experiencing just such a time right now. Three trends are barreling down in parallel on heavy equipment manufacturers, creating a post-sales environment that demands attention and provides tremendous opportunity.

- Customers demand service transparency and rapid response
- Smart-connected devices generate rich, instantaneous data like never before that can help optimize product and service offerings
- A skilled labor gap is challenging service teams to find new efficiencies

While these forces raise challenges, they also provide an exciting opportunity to transform service delivery and new-product development in ways that dramatically increase lifetime customer value. Unlike any prior time in history, sensor data combined with the Industrial Internet of Things (IIoT) and powerful software like asset performance management (APM) provide manufacturers complete access to how their equipment is performing in the field. This combination can help manufacturers unearth powerful insights to improve service and efficiency.

Those manufacturers that strategically take action will be the long-term industry winners delighting customers, controlling costs, and driving innovation.

Heavy equipment service: An industry in transition

Delighting customers in times of extreme expectations

According to a 2017 Technology Services Industry Association report, 73% of field-service providers report they have struggled to achieve profitable revenue growth.¹

APM Software Unlocks New Opportunities

- Reduce maintenance and downtime
- Reduce warranty claims
- Improve first-time visit resolution rate
- Inform faster product-development cycles
- Increase customer satisfaction and service revenues (renewals) through proactive



¹ <http://info.tsia.com/the-state-of-field-services-2017>

Those that are most successful demonstrate a relentless focus on customer experience to differentiate themselves.

Today's equipment buyers operate in what we call the "Amazon era," where they have been trained to expect complete transparency, before and after a sale has been made. We no longer compete with the best customer experience our industry delivers, but the best customer experience anywhere. As such, equipment manufacturers must deliver remote diagnostics, along with preventative and proactive services; schedule on-site repairs rapidly; document easy-to-follow maintenance practices; and offer accurate resolution estimates. This can only be done when we have complete transparency into how equipment is performing onsite in real time.

Creating new value with data insights

The key to delivering proactive, cost-effective service is to centrally collect, analyze, and drive decisions based on the data constantly flowing from sensors installed on modern equipment. These instruments measure performance of the equipment in real time to provide a basis for rich diagnostics and accurate alerting.

According to Gartner research, 89% of marketers expect to compete primarily on the basis of customer experience this year.²

Modern industrial equipment is heavily instrumented, giving a voice to all its mechanical or electronic components – measuring everything from inventory levels to temperature discrepancies. Centrally monitoring and taking action based on this information can have a direct impact on the cost-effectiveness of a service business. First, you no longer have to wait for a physical inspection or manually initiated data process to collect critical data. Second, since information collection happens as a background task, a wide range of data points can be sent without disrupting operations. Third, since the data collection happens automatically, human error is eliminated, creating not only a comprehensive data set, but an incredibly accurate one.

Best of all, the value of the data increases exponentially when traditional sources of data such as service histories, sales data, service-parts inventory, and equipment locations are supplemented with the new product-generated data.

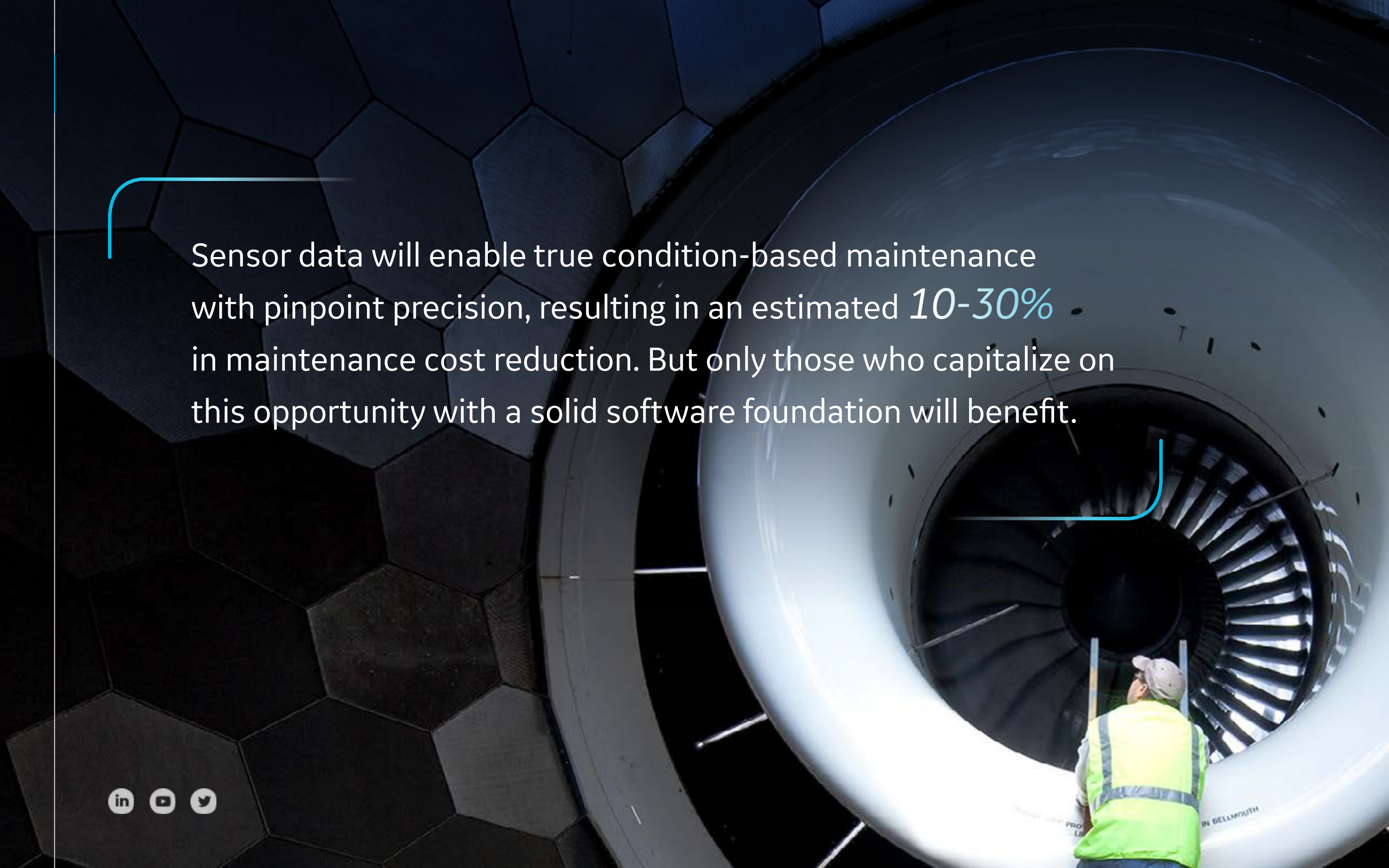
Successfully using this data requires smart software to filter, analyze, and recommend actions on the massive volumes of data being ingested into the system via rich diagnostic capabilities.

Three key areas where equipment manufacturers can drive new value with data insights from smart-connected devices:

1. Fuel better and faster product and service innovations
2. Improve post-sales service, increase efficiency, and lower warranty costs
3. Drive new revenue sources and innovative product-as-a-service business models



² <https://www.gartner.com/marketing/customer-experience>



Sensor data will enable true condition-based maintenance with pinpoint precision, resulting in an estimated *10-30%* in maintenance cost reduction. But only those who capitalize on this opportunity with a solid software foundation will benefit.

Leading companies are using sophisticated cloud-based analytics to detect subtle variations in how equipment is operating and to use these signals as a predictive indicator of future issues and downtime, allowing the OEM to prevent potential issues. And if trouble does occur, this data enables rich diagnostics that can evaluate the current state of the equipment and what has occurred leading up to the failure. These leaders have demonstrated they can predict potential failures of customer equipment, optimize performance, and reduce warranty claims.

Tackling the skills gap

The predictions about an aging skilled workforce creating a manufacturing skills gap have come to fruition. Eighty percent of manufacturers report a shortage of qualified applicants for skilled-production positions, and the consequences of this skills gap are significant. In fact, the total cost of skills shortages has been reported to be as much as 11% of net earnings.³

Manufacturers are using two key strategies to mitigate disruption from the skills gap. First, equipment manufacturers must send the right resources, both people and parts, to get onsite repair right the first time. Second, the organization must strive to improve predictive and preventive maintenance practices, which cost as little as 1/10th as much as unplanned repairs.⁴ APM software can help with both.

Inefficient use of skilled resources drags profits down. More than 70% of manufacturers report at least a 5% increase in overtime costs, and nearly one-third report a greater than 10% increase in overtime costs as a result of not being able to fill skilled roles.³

APM plays a critical role in success

APM software helps equipment manufacturers collect, visualize, and analyze equipment-performance data with the goal of improving reliability, lowering support and warranty costs, and enabling insights-led product innovation. APM helps organizations migrate from a break-fix mode to dramatically more effective condition- and exception-based maintenance processes.

Powering after-sales productivity with APM

A reactive approach to customer service is more than a subtle failing; it costs your service business profits, impacts customer satisfaction, and erodes brand loyalty.

Luckily, APM solutions have blossomed over the past few years and are a proven mechanism to help manufacturers move from reactive to predictive condition-based maintenance. Effective APM solutions address the critical areas of remote monitoring and diagnostics to drive predictive maintenance that delights customers and drives down your costs.

- Leverage a digital twin to detect precursors of equipment failure. Think of a digital twin as a computer model of the “perfect” piece of equipment. Comparing actual equipment state and health to the digital twin can highlight deviations from optimal performance. These anomalies can highlight potential issues weeks or months before they impact your customer.
- Aggregate reliability data across customers to discover systemic problems with the equipment or how it’s being used. The software can identify patterns that guide you to improve your preventative maintenance intervals, manufacturing process, and even product-design requirements.
- Arm field technicians with accurate and detailed remote diagnostics before they go onsite to help them increase first-time fix rate.
- Provide customers the ultimate in transparency and a proactive experience that reduces warranty claims by predicting failures before they happen.



³ <http://www.themanufacturinginstitute.org/Research/Skills-and-Training-Study/Skills-and-Training-Study.aspx> published by The Manufacturing Institute

⁴The Power of GE Productivity Infographic

Five signs it's time to re-evaluate your approach to post-sales service

Do any of the five signs below sound familiar? If you're suffering from one or more of these signs, it is time to reconsider your approach to after-sales service.

1. Does your service team feel trapped in reaction mode? Are you spending too much time responding to repair requests?

It's time to consider a more proactive approach that predicts operations failures in advance so you can get ahead of a problem before customers call to complain.

2. Are you missing contract renewal goals?

Frustrated customers, plagued by frequent repairs or slow response times, will seek out alternative services. APM software can cut down on service calls by enabling predictive and condition-based maintenance practices and shifting customer perception to higher levels of satisfaction.

3. How many service calls are resolved upon first visit? Do you find yourself having to send staff back out because they didn't have the right inventory parts on hand or lacked the skills needed to address the required fix?

Without definitive insight into what needs to be addressed, field staff are sent onsite unprepared. Real-time equipment data can change all that by sending real-time signals of exactly what needs to be addressed.

4. Is your data sitting in silos? How much work is required to bring together data from across different customers to identify patterns that should be addressed by product-development cycles or new maintenance protocols?

It's one thing to have data, it's another to use it effectively. The strongest service programs not only respond to abnormal equipment conditions, they also seek out patterns over time. If it feels like every customer is sitting on an island and you are not learning from them in aggregate, it's time to add an analytics layer to your solution.

5. Are your aftermarket repair/warranty expenses eating into profits due to excessive warranty claims?

APM software can transition your service operation from expensive fixes to predictive maintenance and preventive care.



APM in Action

“Joy Global recorded 115% ROI in 12 months, and it continues to grow as the implementation is rolled out to other regions. Our partnership....has allowed Joy Global to help customers optimize their business strategy.”

Richard Peters, LCM Business Development
Manager, Joy Global



Joy Global

Joy Global is a leading worldwide provider of advanced equipment, systems, and direct services for the underground- and surface-mining industries. Joy Global's products and services are used extensively for the mining of coal, copper, iron ore, oil sands, gold, and other mineral resources. With 153 locations across six continents, its mission is to solve mining's toughest challenges.

Joy Global works directly with its customers to provide equipment and services. That direct-service business model allows it to be a leader in lifecycle management. Partnering with its customers, the company both preserves the function of an asset long after it's purchased and helps deliver the highest production rates. Joy Global's solutions reduce total cost of ownership by optimizing mine performance to achieve the lowest cost per ton.





About GE

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