Enhancing the Customer Experience through IIoT-enabled Remote Monitoring

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Keywords

Service Performance Management (SPM), Field Service Management (FSM), Industrial IoT (IIoT), Original Equipment Manufacturer (OEM), Ingersoll Rand, Tata Consultancy Services (TCS), Customer Journey

Summary

The prime reason most industrial plants still have internal, on-site maintenance staffs is to reduce repair times and unplanned downtime, which negatively impact revenue, customer satisfaction, cost, and other key business metrics. In most plants today, contracting with the equipment manufacturer for maintenance usually results in unacceptably long periods of downtime for critical equipment while waiting for a technician to arrive – particularly with the typical two passes required for inspection and repair.

However, emerging Industrial IoT (IIoT)-enabled condition monitoring and predictive maintenance approaches allow manufacturers to reconsider outsourcing to the OEM. Faced with the current skills shortage and other constraints, many will find OEM supplier-provided services appealing.

> Subscription-based, IIoT-enabled predictive maintenance services are becoming increasingly attractive for manufacturers and other industrial organizations. This report explains why and how, and includes a case story. Owner-operators should include IIoT-enabled services as a critical selection criterion for sourcing equipment, particularly with more complex devices.

Outsource Maintenance to OEM?

An ARC Advisory Group survey indicated that the primary driver for IIoT adoption involved the need to reduce both downtime and mean time to repair (MTTR). Poor asset reliability and downtime negatively impact a variety of key metrics for manufacturing including revenue with lower capacity, customer satisfaction due to missed on-time shipments, quality, yield, and inventory turns with increased buffers to mitigate risk of equipment failure.

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Common "Two-Pass" Repair Has Unacceptable Downtime

When an OEM or third-party service provider performs maintenance, a "two pass repair" is often needed – one visit for inspection to identify the needed parts and skills, and a second to actually perform the repair. This could easily turn into over a week of downtime for critical equipment, which is usually unacceptable. To be able to respond quickly to equipment issues, many manufacturers instead choose to have their own on-site, general-purpose maintenance staffs.

Two Pass Repair Without IIoT and Remote Monitoring	
Complaint call	Call center
Inspection	On-site
Manage work order	Call center
Repair	On-site

One Pass Repair With IIoT and Remote Monitoring	
Problem Detection	Via web
Evaluate	Via web
Manage work order	Via web
Repair	30 to 80% via web
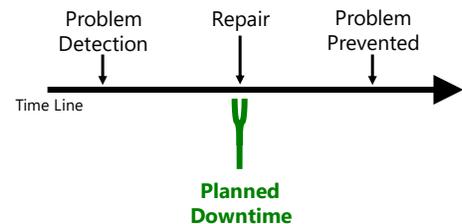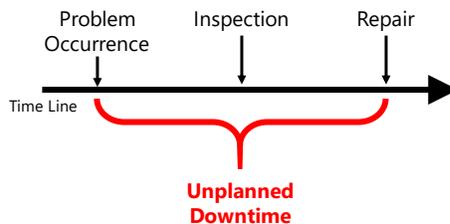
Comparing Field Service without and with IIoT

Predictive Maintenance with IIoT and Analytics

Now, with remote asset health monitoring using IIoT and well-crafted analytics, OEM's can obtain advance warning of a failure and provide services for near-zero unplanned downtime. The OEM has an intimate understanding of the operating performance of the equipment it designed and built, enabling it to develop algorithms for successful early detection of issues – sometimes up to six months prior to failures.

With this advance warning, the OEM can either alert the end user or schedule repair with its own field service technician. In the latter case, the OEM technician's deep understanding of equipment performance and repair knowledge typically translate into a higher first-time fix rate and longer mean time between failure (MTBF) compared to work by on-site, general-purpose technicians. IIoT-enabled remote monitoring and analytics make outsourcing maintenance to the OEM a practical business choice for manufacturers.
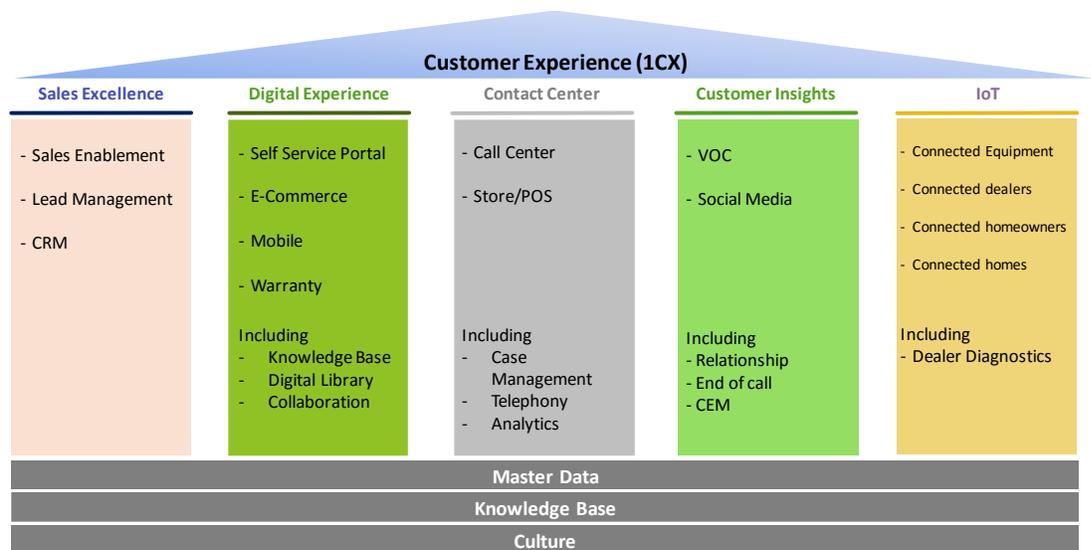
Ingersoll Rand "One Customer Experience"

During a session on OEM-provided service performance management at a recent ARC Industry Forum, Matt Orcutt, Director, Customer Experience, Ingersoll Rand Residential HVAC, provided insights for melding IoT into the broader customer experience. The Internet has created transparency that extends across the systems that touch the customer and increases the need for brand protection.

> The Internet has created transparency that extends across the systems that touch the customer, and increases the need for brand protection.

Mr. Orcutt described Ingersoll Rand's approach for integrating the "touch-points" from awareness (search), initial engagement, purchase, and installation, to post-sales support. This uses an omni-channel approach involving both Ingersoll Rand and its dealers. The methodology includes a "customer journey map," a process flow chart like Lean's value stream mapping, to identify pain points and unmet needs, such as entering duplicate information into multiple systems.

Customer Experience (1CX)				
Sales Excellence	**Digital Experience**	**Contact Center**	**Customer Insights**	**IoT**
- Sales Enablement - Lead Management - CRM	- Self Service Portal - E-Commerce - Mobile - Warranty Including - Knowledge Base - Digital Library - Collaboration	- Call Center - Store/POS Including - Case Management - Telephony - Analytics	- VOC - Social Media Including - Relationship - End of call - CEM	- Connected Equipment - Connected dealers - Connected homeowners - Connected homes Including - Dealer Diagnostics
Master Data				
Knowledge Base				
Culture				

Framework for Ingersoll Rand's "One Customer Experience"

Mr. Orcutt then focused on IoT with a use case for a better customer experience. Here, a consumer with a newly installed air conditioner returned home to find the temperature in his house warmer than set. The traditional approach would be to send a service technician to troubleshoot and repair; which would be both inconvenient for the customer and expensive for the dealer. However, using the new Nexia Home Intelligence system, the dealer was able to tap into the system and determine that the air conditioner

was recovering from a recent power outage. The customer's issue was immediately answered and resolved without sending a technician.

For part of the "One Customer Experience" initiative, Ingersoll Rand engaged with Tata Consultancy Services (TCS) for consulting and implementation services. TCS helped improve the ease of doing business with channel partners. This included applications across multiple strategic business units (SBU) and geographies. TCS also provided strategic consulting for improving the connected services in the customer portal.

Recommendation

To borrow Geoffrey Moore's terminology for the lifecycle of technology adoption, the application of IIoT with analytics for predictive and prescriptive maintenance has clearly "crossed the chasm." With this in mind, ARC recommends the following actions:

- If they have not already done so, OEMs should develop and deploy predictive/prescriptive maintenance services using IIoT. Being an early adopter is important with a significant first mover advantage, enabling closed-loop PLM for a better product and high-margin revenue growth with prescriptive maintenance subscriptions.

- Owner-operators should include IIoT adoption by their equipment suppliers as a critical selection criterion when sourcing equipment. In particular, this applies to the more complex devices for which on-site, general-purpose technicians do not have the specific expertise, skills or tools required for dependable trouble shooting, problem isolation and repair.

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