



Buyer's Guide: Improving Service with Remote Monitoring

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Tech-Clarity

Improve Service ROI, Build your IoT Foundation for the Future

Companies are leveraging the IoT to digitally transform their business and the results are impressive. But many struggle choosing a place to begin. One proven way to get started is by remotely monitoring machines. This initiative allows manufacturers to quickly achieve IoT value while paving the way for even more substantial benefits over time.

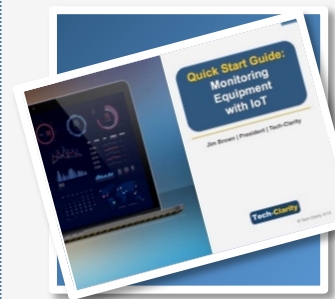
The most common way that companies gain tangible ROI from IoT is through improved service. The IoT lets companies transform service to generate more – and more profitable – service revenue. They do this by moving from reactive to proactive to predictive service, and leveraging advanced technologies like AI, machine learning, and big data analytics. They can also adopt new service delivery processes like remote service. But the most common first step is reducing cost of service through remote monitoring.

This guide briefly shares the tangible, practical first steps companies can take to improve service through IoT remote equipment monitoring and how IoT Platforms help deliver the value. Then, the majority of the buyer's guide focuses on the important requirements companies must consider to ensure a successful initiative.



SLM Maturity Model
Gartner Group

“Aftermarket services offer excellent margins – while aftermarket services represent approximately 24% of total revenue, it often contributes 40% to 80% of profit.”



Quick Start Guide: Monitoring Equipment with IoT –
Tech-Clarity

“Remote equipment monitoring provides value in the short term and helps develop a strong analytics foundation for your broader IoT strategy.”

Remote Monitoring Drives Service Performance

Remote monitoring value starts with the basics of connecting equipment and collecting data. The first step in many company's journey is simply accessing equipment to understand its current location and status. Then, they can expand their benefits by gathering and analyzing basic performance metrics.

Leveraging the basics, companies can gain service intelligence to improve service performance. One key way to do this is by recognizing that there's a problem before their customer or operator does.

Remote monitoring can also provide the information needed to correct issues. As Wendy MacNaughton of Varian Medical Systems shares, *"We have a lot of real-time data coming in. People rely on our IoT system to troubleshoot."*

The next sections cover what it takes to get started and achieve the targeted value. The requirements are intended to help companies frame their search process and efficiently find the right solution. The



"It's never good if there is a treatment interruption and a customer has to call us to fix the problem. They may think twice when it's time to buy another machine or renew a contract."

We usually call them when we receive an alarm from a machine instead of them calling us, and usually in real-time. The customer really appreciates when we know the exact problem they are having."

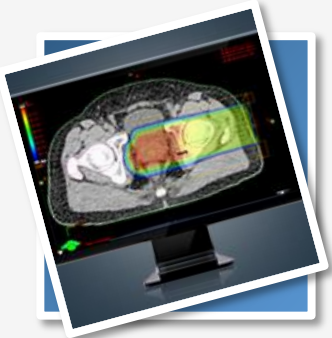
Wendy MacNaughton, Senior Software Engineer,
Varian Medical Systems

checklists go beyond software functionality to cover factors important to implementation, adoption, partner choice, and more. These are the things that drive long-term business success from a solution.

Access Equipment and Equipment Data

The first step in the remote monitoring journey is to get access to equipment, get it connected, and gain access to equipment data. To do this, companies need to understand which data impacts their key performance indicators (KPIs) and helps them achieve their long-term service goals.

Once data sources are identified, they have to connect to the sensors, devices, or equipment that holds it. These connections could include a



“Our platform has powerful agents that we have deployed at our customer sites over the years, it’s very easy for our reps to reach our customer’s machine and multiple people can troubleshoot the same machine at the same time. We grew from nothing to thirty thousand connected machines worldwide.”

Wendy MacNaughton, Varian Medical Systems

combination of wired, wireless, cellular, or indirect connections via gateway devices or control systems.

An IoT platform must have multiple methods to connect, whether it’s accessing new equipment designed with IoT in mind or existing machines.

Remote Monitoring: Access Requirements

Out-of-the-box connectivity

Support for industrial automation protocols and standards

Connection through onboard or companion computers

Tapping into existing control systems using APIs

Communicate with Equipment

Once equipment is connected it's important to communicate machine data like energy usage, machine settings, hours of operation, or temperatures back to the business to gain service intelligence. For smart equipment, companies can gain even greater insight by capturing error codes or alerts, log files, software versions, and configurations.

Remote Monitoring: Communication Requirements

Flexible, out-of-the-box connection

Support for a variety of protocols

Secure data transmission

Scalability

This data can improve service by alerting the company to issues in a timely manner and providing the right information to pinpoint issues and root causes. The information may be used to help customers self-service the device or to dispatch the right person, tools, and parts based on a clear understanding of the situation. Bi-directional communication can also help by enabling remote service.



“We needed access to our machine data and log files in real-time. We can communicate with agents via web services that trigger the features we developed on our platform and automatically create cases in our CRM system.”

Wendy MacNaughton, Varian Medical Systems

Leverage the Edge to Pre-Process Communication

Remote Monitoring: Edge Requirements

Ability to aggregate data

Information filtering

Configurability without programming

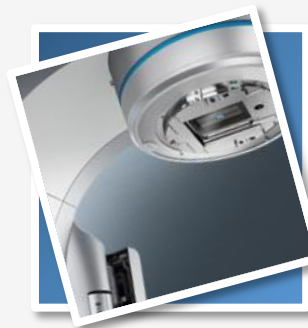
Pre-processing

Security

One challenge companies frequently encounter is getting overwhelmed by irrelevant information or simply receiving too much data. A single piece of equipment can generate vast amounts of data very

quickly, for example from multiple sensors that may take readings every millisecond.

Companies can benefit by adding intelligence to filter data using rules so they get the right information to service the equipment. Edge computing can also interpret data to look for anomalies, out-of-spec situations, or other exceptions that might indicate the need for service. This information can be used to decrease the “noise” so important conditions and events are quickly identified and acted on.



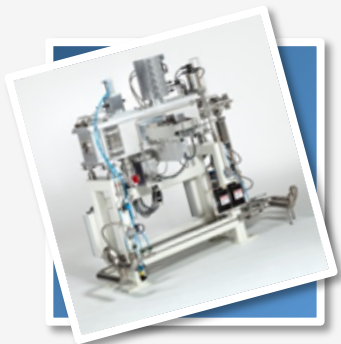
“Our equipment log file could be over 500 megabytes per machine per day, with lots of repeat information in different files. Now, real-time information is pre-processed on a local machine acting as an edge device at the customer site so the information that comes back is all useful, clean data and much easier to process on the platform.”

Wendy MacNaughton, Varian Medical Systems

Share Actionable Service Information

Equipment data must be aggregated, contextualized, analyzed, and shared to create valuable service intelligence. Companies may also benefit by integrating other data sources like CRM, service records, weather data, configurations, customer data, geospatial information, or other information in order to gain a more complete equipment service perspective.

Equipment intelligence should be presented as KPIs and alerts, for example in color-coded dashboards, to communicate status, issues, and priorities.



“Our machines broadcast status messages. Our agents are able to receive the data in real time, determine if it’s a problem, and send it up our cloud platform. We have very complex equipment with thousands of potential faults, so we use a kind of matrix to determine the priority.”

Wendy MacNaughton, Varian Medical Systems

Remote Monitoring: Visualization Requirements

Aggregate, sort, filter, color-code dashboard data

Workflows and notifications

Predefined analysis, anomaly detection, trends, algorithms

Integration connectors and tools

Customization without need to code

Best practice starter applications

Equipment information should not be passive. When issues are identified, the platform should be able to launch workflows or run applications like work order creation based on business rules.

Implementation and Adoption

Finding the right platform is only a part of the challenge. Companies must also develop an implementation and adoption plan. The plan should start with a vision of how they will improve service performance. Most companies will benefit from business-oriented consulting to develop their strategy, define use cases, and determine the value to justify them.

Companies should seek outside help from their IoT platform vendor and partners to guide them through training and adoption. The partner should be able to offer real-world experience, technical know-how, and business-oriented training.

The final point on adoption is to take a platform approach. Choose a solution to grow on, but start small and scale. Companies today should look for pre-designed applications, dashboards, algorithms, adapters, and APIs and not start from scratch so they can focus their energy on achieving service-oriented business results and not reinventing the wheel.

Remote Monitoring: Adoption Requirements

An integrated platform

Predefined applications, dashboards, algorithms, adapters, and APIs

Partners with business and technical expertise

eLearning or prerecorded training

Selecting a Strategic Partner

Remote Monitoring: Partner Requirements

Technical expertise in IoT and IIoT

Business expertise in service, innovation, and manufacturing

Digital enterprise vision

A broad and knowledgeable partner ecosystem

Stability

Investment in products

Experience in your industry

Support in your geography

Selecting the right IoT partner may be the most important decision when looking for a solution to improve service with remote monitoring. The vendor should understand IoT technology and implementation, but also understand how to effectively transform service processes and organizations.

Remember that improving service should provide a foundation for future IoT value. It's important to choose a partner to grow with. Select a partner that can help direct a broader digital transformation beyond remote monitoring and service transformation.

It's crucial to understand the vendor's vision for the digital enterprise. Look for comprehensive functionality from basic needs to more advanced digital twin, augmented reality, and analytics capabilities.

Next Steps



“The data we receive from our machines can indicate if they need to be cleaned or tuned so they run better and have fewer problems. Customers don’t notice when the machine runs fine, only when there’s a problem. With remote monitoring we have 99.95% uptime and we get happier customers.”

Wendy MacNaughton, Varian Medical Systems

Leveraging the IoT can help companies improve service for themselves and their customers by reducing cost and transitioning to proactive and predictive service. Remote monitoring allows companies to identify and resolve issues remotely, providing faster service and increased uptime for the customer while reducing the cost of truck rolls and putting service technicians on site. It can go beyond cost savings to create a new source of revenue from paid upgrades or remotely enhancing equipment capabilities or permissions by “unlocking” enhanced capabilities via a subscription.



Buyer's Guide Checklist

Remote equipment monitoring is a proven way to improve service. It's also a valuable first step in the IoT journey and the digital transformation.

Companies embarking on a remote monitoring initiative to improve service should look for the capabilities outlined in the sections of this guide to help ensure they get the value they seek. In addition, they can use the following checklist as high-level criteria to compare offerings.



Machine Monitoring Solution Checklist

- Develop a strategy to improve service performance
- Start small and expand value quickly
- Get the right capabilities to monitor equipment, analyze data, put data in context, and create actionable service intelligence
- Look for predefined connectivity, dashboards, analysis, and applications and not start from scratch
- Adopt a platform approach to remote equipment monitoring
- Get the right business and technical help to drive successful adoption
- Create a foundation for future growth
- Look for a partner with IoT and business expertise and a comprehensive ecosystem
- Get started with remote monitoring to reduce service cost, grow service revenue, and develop stronger customer relationships



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About the Author

Jim Brown is the President of Tech-Clarity, an independent research and consulting firm that specializes in analyzing the business value of software technology and services. Jim has over 20 years of experience in software for the manufacturing industries. He has a broad background including roles in industry, management consulting, the software industry, and research.

Jim's experience spans enterprise applications including PLM, ERP, quality management, service lifecycle management, manufacturing, supply chain management, and more. Jim is passionate about improving product innovation, product development, and engineering performance through digitalization and the intelligent use of software technology.

Jim is an experienced researcher, author, and public speaker and enjoys the opportunity to speak at conferences or anywhere he can engage with people with a passion to improve business performance through software technology.

Image Credit: Varian Medical Systems

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