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# Tech Trends in **Remote Asset Management**

This paper contemplates how digital trends like IIOT, Big data, and Edge analytics are shaping the future of industrial asset management and how a combined solution of these trends can benefit organizations.

Note: In this article, the word 'assets' refers to an organization's physical assets.

Asset-intensive industries like manufacturing, construction, heavy equipment, oil and gas, and commercial machinery have made the management of assets their top priority as their total productivity and performance depend mainly on these. In layman terms, the term "Asset Management" is simply the ideal way of managing assets to achieve a desired and sustainable outcome from its design to decommissioning during its lifecycle.

In this paper, we discuss how new technologies help shape the future of Industrial asset management while redefining traditional industrial asset management.

## Challenges faced by Manufacturing Organizations

Most asset-intensive sectors spend billions of dollars on Asset management to help deal with the following challenges.

- Active reduction of an asset's downtime.
- Substantial financial loss caused by a minor fault in an asset or error in the process.
- Improper handling guidelines of an asset can put people in danger.
- Any threats that can affect the security and safety of the workforce are a focal point.
- Constantly monitoring and analyzing inventory to ensure the upkeep of an asset is costly.
- Incorrect valuation of RoA (Return on Assets) due to lack of knowledge.
- Optimum RoA is not reached as a proper inventory of assets, and its functions are cumbersome to maintain.

## Current trends in Industrial Asset Management

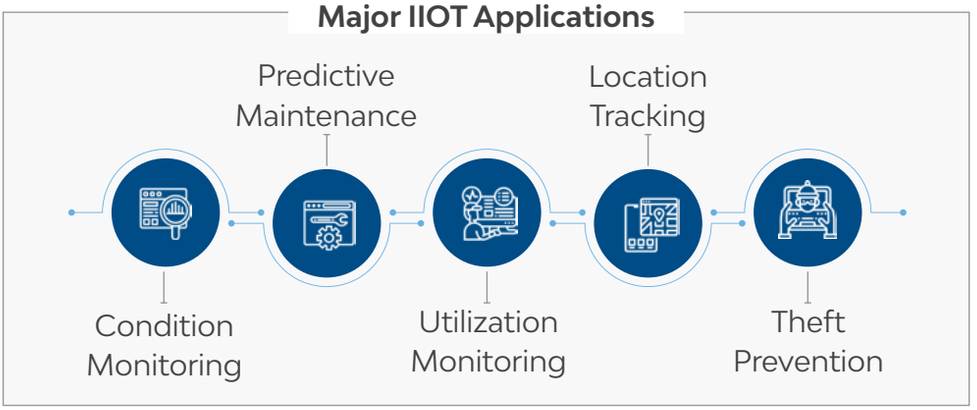
Every organization needs to monitor processes, analyze data, extend the life of assets, conduct secure operations, and improve productivity to stay competitive and meet the new market's regulatory and consumer demands.

Following are the technologies that are currently trending in the industrial asset management space.


## Role of IIOT

Machinery is maintained through visual inspections, handwritten lists, or excel sheets by asset managers who track equipment status, location, and performance, failing to provide correct asset information. Also, valuable assets are susceptible to thefts and vandalism due to the lack of visibility.

Low-power wireless sensors can turn mundane physical objects into digital devices with Internet of Things (IoT) technology using sensors. The transmitted information is received by a control center where the data is processed by the relevant technicians who leverage the robust Long-range IoT technology even from the foremost remotely isolated assets. Real-time data received from cross-site assets can quickly diagnose underutilized equipment, bottlenecks, and impending signs of wear and tear to prevent breakdowns.



The industrial internet of things (IIoT) transforms various industrial equipment/tools into a unified network where assets integrated with sensors enable consistent, quick data transmission to and from the equipment. Remote service management systems are set up to increase the return on assets (ROA) utilizing its digital capacities, thus improving all the assets linked to IIoT. Moreover, sensors are still evolving in intelligence and data granularity and can further increase the need for data collection, storage, retrieval, networking, and connectivity.

## Role of Big Data

Big Data classifies the collected information by various systems and obtains relevant conclusions that help organizations improve operations' overall efficiency and obtain a complete visualization of the manufacturing processes by integrating previously isolated systems, thereby facilitating a better understanding of the status of each system both together and separately.

### Major Big Data Applications

- **Process Improvement:** Operational efficiency is improved by detecting errors, conducting frequent quality checks, and revealing an optimal production or assembly route.
- **Bottlenecks Eliminated:** Manufacturers are guided to pinpoint variables that affect an asset's performance.
- **Predictive Demand:** By Visualizing an activity through historical data and internal analysis (customer preferences) and external analysis (trends and external events), accurate and significant trends can be predicted, enabling a company to update its product portfolio to suit current trends.
- **Predictive Maintenance:** Sensors transmitting real-time data can be monitored constantly to recognize patterns of possible failures to trigger warnings.

Apart from the above, there are many more benefits to analyzing Big Data, such as optimizing load, non-conformity analysis, improved security, and supply chain management.

## Role of Edge Analytics

We are in an era where complex algorithms and even an operating system can run on a commercial device using an onsite embedded Systems-on-a-Chip (SoCs). This phenomenon is known as Edge Analytics as the work gets done right at the edge of the device.

Edge analytics can use the power of the Industrial Internet of Things (IIoT) setup to aggregate, filter, process, or prioritize data. It can also use the power of cloud services to run complex analytics on data to support decisions and actions on the system.

### Major IIOT Applications

- **Latency Reduction:** Edge Analytics implement machine-learning algorithms that run directly on IIoT devices, saving time for predictive analytics.
- **Adaptive Process Control:** Edge analytics enables adaptive process control to arrive at ideal process parameter set points and tolerances based on the condition of the environment by monitoring data like temperature, pressure, and humidity, ensuring consistent quality, leading to a significant increase in yield.
- **No Bandwidth Cost:** Edge analytics leverages the benefits of analyzing real-time data without the bandwidth costs of sending that data to a cloud or a data center.
- **Predictive Maintenance:** Alerts to maintenance teams before escalations happen, form an efficient predictive maintenance strategy using IIoT sensors and edge devices.

Leveraging real-time sensor data with increasingly powerful onsite computation, data management, and edge analytic solutions is ideal for a broad range of remote industrial applications. These solutions can also be used effectively in manufacturing, power and water, oil and gas, mining, transportation, smart grid, and smart building use cases.

## A Powerful Solution

Industrial Internet of Things (IIoT), Big Data, and Edge Analytics provide organizations with a combined solution, complementing each other and generating substantial value. IIOT gathers the data from all possible sources. Big data analyzes data in a meaningful way. At the same time, Edge Analytics takes real-time actions to resolve/prevent issues.

To truly realize the various benefits of IIoT, Big data, and Edge analytics, organizations must understand that there isn't a single solution to extracting actionable data insight. Rather, it's about IIoT, Big Data, and Edge Analytics working together, complementing each other. The data collected by IIoT devices is not meaningful if robust analytics cannot be performed on it. Similarly, Big Data is not feasible if the IIoT doesn't provide ground-level data to analyze.

# Conclusion

In the field of Industrial asset management, organizations adopt all the latest technologies like IIoT, big data, and edge analytics to avail higher ROI. The progress in sensors, networking, and computational power provides a real-time perspective of a complete system network, on which even remotely working operating teams can act quickly. Companies may encounter implementation challenges of these technology trends, but the potential returns are far more than the investment. As manufacturing organizations adopt IIoT, big data, and edge analytics, they get highly mature processes for predictive maintenance.

## About the Author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Arpan has 4+ years of delivery and consulting experience in Banking and Manufacturing sectors. He is currently responsible for delivering business solutions for global Oil and Gas clients, driving their transformation initiatives. He comes from an Engineering background and holds an MBA degree from IIM Calcutta.